Doctors' Perspective on Obstetric Ultrasound: Concept, Knowledge and Practice.

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Abstract

Problems arise when women attend for obstetric ultrasound scans, not always fully aware of the purpose of the examinations they have chosen to opt for and sometimes experience anxiety, as their expectations are not met. This study has explored, through in- depth interviews and 'framework' analysis, whether doctors are actively engaged in unbiased information-sharing with pregnant women during their consultations. Through exploration of the literature on women's and health professionals' perspective on the use of obstetric ultrasound, a gap is seen in the knowledge regarding the medical perspective on ultrasound use in pregnancy. Results of this study revealed three themes relating to the doctor's experiences of offering obstetric ultrasound: doctors' knowledge and understanding, their views on the practice of obstetric ultrasound use and their ideas on the concept of ultrasound. These themes been considered alongside the writings on power/knowledge, governmentality and self-surveillance through risk theory, by the philosopher Michel Foucault (1926-84), as his ideas have been central to this research question. The conclusion reached is that, although making changes to doctors' in house training may increase their knowledge of obstetric ultrasound, it may still be the case that their professional position within society will still create a barrier to women making informed decisions when requiring to consider opting for ultrasound scans during their pregnancy.

Contents

Introduction

This report set out to identify whether doctors are actively engaged in unbiased information sharing, of obstetric ultrasound use, with pregnant women. Using 'framework analysis' to explore the medical perspective, it has emerged that not all doctors discuss ultrasound use during their consultations. Philosophical background, a lack of knowledge about ultrasound's limitations and constraints from care pathways all play a role in why this may be the case. Through exploration in Chapter Two, of the existing literature on women's and health professionals' perspective on the use of obstetric ultrasound, it was revealed that there is a gap in the knowledge regarding the medical perspective on ultrasound use in pregnancy. Through in depth interviewing and 'framework analysis described in Chapters Three and Four, three themes: doctors' knowledge and understanding, their views on the practice of obstetric ultrasound use and their ideas on the concept of ultrasound use, emerged and in Chapter Five, these themes have been considered alongside the writings of the philosopher Michel Foucault (1926-84), as his ideas have been central to this research question. Chapter Six concludes that although implementing changes to working practice might increase junior doctors' knowledge of obstetric ultrasound, it may be that their professional position and stance within society may still provide a barrier to women making informed decisions when requiring to consider opting for ultrasound scans during their pregnancy.

This study was undertaken in a district general hospital that provides antenatal services for women residing in a town in the north of England. At the time of conducting this research the author was employed at this hospital as an ultrasound practitioner, providing ultrasound obstetrics and gynaecology ultrasound services.

Within this writing, research undertaken to formulate this doctoral project report will be referred to as the *current* study in order to protect the confidentiality of the organisation and research participants and to distinguish the research from references made to other already published studies in the literature. Clarifications of alternative terminology and contextualising aspects of the text are included in a glossary.

Glossary

Experiential learning theory (ELT) describes learning as a process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience (Kolb, 1984, p 41).

Fetal anomaly screening test (20 week scan) is an obstetric ultrasound examination, offered between 18 and 20 weeks and 6 days of pregnancy, to survey' the fetal and placental anatomy. Several terms are used for ultrasound fetal anomaly screening: mid pregnancy fetal anomaly scan, 20-week scan, and the second-trimester scan.
This project will refer to the fetal anomaly scan as the 20-week scan.

Good Medical Practice sets out the principles and values on which good practice is founded; these principles together describe medical professionalism in action.

Green-top guidelines are concise documents, providing specific practice recommendations on focused areas of clinical practice. These guidelines are produced under the direction of the Guidelines and Audit Committee of the RCOG (2007).

MIDIRS (midwives information resource services) that supplies vital education and practice development resources to assist midwives and student midwives in their practice and studies. Available to both health professionals and prospective parents on the UK National Screening Committee (UK NSC) website.

National Institute for Health and Clinical Excellence (NICE) to help those working in the NHS, local authorities and the wider community deliver high-quality healthcare. It develops evidence- based guidelines on the most effective ways to diagnose, treat and prevent disease and ill health. Patient friendly versions of the guidelines can help educate and empower patients, carers and the public to take an active role in managing their conditions.

National Pathways Association (NPA), established in 1996, supports the development of care pathways and covers England, Wales and Northern Ireland. It provides a knowledgeable resource with expertise on the implementation, development, education and strategic development of care pathways.

NHS Cancer Plan (2000), built on existing cancer initiatives, to provide a comprehensive strategy to tackle cancer across the whole patient pathway. It established 34 cancer networks in England, to lead the improvement of cancer services in each locality.

NHS Fetal Anomaly Screening Programme (NHS FASP) The Programme Centre in Exeter is responsible for both the NHS Fetal Anomaly Ultrasound Screening Programme and the Down's syndrome Screening Programme. The NHS National Fetal Anomaly Screening Programme is part of the overall structure of the UK National Screening Programme's Directorate of the NHS. The remit and aim of the programme is to set standards and oversee the implementation of a screening programme, which conforms to an agreed level of quality for all pregnant women in England. The screen is for certain chromosomal and structural abnormalities in their unborn babies. This includes the offer of an ultrasound scan and biochemical testing during the early stages of pregnancy.

NHS Plan outlines the vision of a health service designed around the patient: a new delivery system for the NHS as well as changes between health and social services, changes for NHS doctors, for nurses, midwives, therapists and other NHS staff, for patients and in the relationship between the NHS and the private sector.

NT screening, where the measurement of the Nuchal Translucency (NT) is used as one of the factors to calculate a women's level of risk for carrying a fetus with Down's syndrome. The measurement is taken during an ultrasound scan (between 11 weeks plus 2 days and 14 weeks plus 1 day gestation)

Nuchal Translucency (NT) refers to the subcutaneous space between the skin and the cervical spine of the fetus and an increased NT is associated with an increased risk of aneuploidy, (fewer or more chromosomes than usual) particularly trisomy 21 (Down's syndrome). An increased NT is also said to identify a high proportion of other chromosomal abnormalities and is associated with major cardiac abnormalities and a wide range of skeletal dysplasias (unusual growth of a part of the body, including the total absence of such a part) and genetic syndromes.

RADIUS (Routine Antenatal Diagnostic Imaging Ultrasound Study)--was a large randomised clinical trial to assess the effectiveness of routine ultrasound screening for women who are at low risk for poor pregnancy outcomes. The principal investigators designed the study in response to a recommendation by the 1984 NIH Consensus Development Conference on Diagnostic Ultrasound Imaging in Pregnancy for studies "to establish the clinical efficacy of ultrasound . . . [and] its contribution to reducing morbidity

and mortality." The preliminary results of RADIUS have been reported in the American Journal of Obstetrics and Gynecology and in the New England Journal of Medicine in September 1993.

UK National Screening Committee (UK NSC) is recognised as the source of expert advice on screening, advising ministers and the NHS in all four UK countries. Its advice is based on latest research evidence and is informed by multidisciplinary groups including patient representatives.

Ultrasound Practitioner (sonographer)

A non-medically qualified professional, performing, interpreting and reporting on diagnostic ultrasound scans.

List of Figures and Tables

Chapter One: Background to the research

Introduction

The chapter opens with a description of 'an encounter' between an ultrasound practitioner and a woman and her partner attending for an obstetric scan (a fetal anomaly scan, commonly referred to as the 20 week scan) and where a difference in understanding as to the purpose of the examination between the ultrasound practitioner and the prospective parents occurred. It was the need to reduce any future occurrence of conflict (a difference in understanding) that arose from this situation that has provided the underlying motivation for this research project.

Ultrasound practitioners are faced with the problem that some women attend for obstetric ultrasound scans having little understanding of the purpose for which they are offered. This difference in understanding (conflict) can create levels of anxiety and distress to the women and their partners. The second section of the chapter describes the practice of incorporating ultrasound imaging in routine antenatal care and focuses on the issue of how women are provided with information in order to make informed decisions about whether to opt for ultrasound screening during their pregnancy. It explores the role of the health professionals in supporting women in the act of decision-making and considers the opportunities health professionals have, within the antenatal care pathways, for information sharing about the capabilities and limitations of ultrasound imaging. The third section, reviews the existing literature on women's perspective on obstetric ultrasound use in relation to the described workplace problem, as depicted earlier, through the passage recalling the 'encounter' (p.15). This literature review has helped to define the research problem. The chapter concludes by considering the need to look at how health professionals share information with pregnant women, highlighting the issue of a lack of

published data on the doctors' feelings and experiences of offering ultrasound imaging to pregnant women, demonstrating the need for research into whether women are supported by doctors when making decisions surrounding opting for fetal ultrasound scanning. The focus of this study has been to explore the medical perspective on obstetric ultrasound use and to determine whether doctors are active agents in providing women with unbiased information about routine ultrasound imaging. The aim of the study is to consider what changes may be made to current working practice within the hospital undertaking the study and whether these changes may help women feel better prepared for the antenatal ultrasound scans for which they opt.

1.1 Underlying motivation for the study- 'an encounter'

The continuation in the drive for improvements to antenatal service delivery together with personal reflections of an encounter with a woman at the end of my ultrasound training has provided the underlying motivation for this study.

It was over ten years ago that I was faced with a scenario that still re-occurs today, of the dilemma of women consenting to fetal ultrasound screening without appearing to understand the purpose of the examinations for which they have opted.

An encounter:

> *Like all sessions it was busy; women had been seen and many were still waiting to be scanned. Thinking back, they were all just a number. As we checked on the list to see whether we were keeping ahead of schedule, we considered whether there was time for me to scan the next woman. I was still in my training with just a short time left before I was able to practice independently. It was a*

typical day in the department when the couple entered the scan room, my scan room, where I felt reasonably confident as a professional providing an ultrasound service. Before starting a scan, it is routine to confirm the woman's details, check that she understands what the examination is about and ask if she has any questions prior to performing the examination. It was at this moment that the unexpected happened! The woman stated that she wanted to have this 20- week scan, but after being informed that the purpose of performing the scan was to screen for fetal abnormalities, declared that she did not want me to look for any abnormalities in her baby. The woman was asking to just look at the baby! I was taken aback at this request and asked her if she understood the purpose of the scan and that it was purely a screening test to look for structural abnormalities of the fetus that women are invited to accept. From the response, it appeared that both the woman and her partner clearly misunderstood the purpose of being offered the scan. When I tried to explain that I was unable to just "look" at her baby without possibly identifying a problem or a concern, the lady became distressed and angry that I was denying her the right to "see" her baby.

This scenario is what Kolb (1984) described as a 'concrete incident' in his Cycle of learning, a process whereby knowledge is created through the transformation of experience. A full explanation of Kolb's cycle of learning is given in appendix 1 (p 238) Over a decade later ultrasound practitioners working in an ultrasound department serving a hospital in the north of England, are still faced with similar incidents, where some women do not seem fully aware of the purpose and limitations of the scans for which they are attending.

1.1.1 Ultrasound imaging in maternity care

In pregnancy a healthy woman will be offered routinely, two ultrasound examinations (NICE, 2008). As seen on the antenatal timeline (appendix 2, p 239) depicting routine screening tests offered in pregnancy, the first examination, the Dating scan, is to establish the gestation of the pregnancy, whether it is a singleton or multiple pregnancy and establishes the expected delivery date. During this scan, women are able to opt for Down's syndrome screening where, during the dating scan, measurements of the nuchal translucency are taken. The second ultrasound scan offered occurs between 18 and 20 weeks plus 6 days of pregnancy, commonly referred to as the 20- week scan and is offered to all women to look for abnormalities of the fetus. The decision to undergo an antenatal ultrasound scan is up to the individual. The duty of health care professionals is to provide pregnant women with adequate information to make an informed choice. The NHS Fetal Anomaly Screening Programme (NHS FASP) has set auditable standards (appendix 2, p 239) regarding seeking consent to screen for abnormalities and make it clear that women should have more than one opportunity to discuss the idea of fetal anomaly screening before attending for the scan. Preparation for the screening starts at the point of 'first contact' and should be revisited at subsequent appointments with the midwife or doctors in clinic. Throughout antenatal care health professionals fulfill different roles in supporting women in pregnancy and information regarding ultrasound screening is passed on to prospective parents, both verbally and via leaflets at different times by health professionals. The timeline for screening tests depicts the number and timings of screening tests available to women along the routine antenatal care pathway. In the early stages of pregnancy, before women attend for their first hospital antenatal appointment, a community midwife sees them. During this 'booking' visit, often undertaken at the prospective parents' home, screening tests are discussed along with other pregnancy

related topics. Women are provided with information about the ultrasound screening tests in "The pregnancy book" (Department of Health, 2009) and they can access other relevant resources such as, NHS FASP publications and the Midwives Information and Resource Service (MIDIRS) information leaflets.

1.1.2 Avoiding 'conflict'

Before any ultrasound examination can be performed, the ultrasound practitioner must be assured that the woman is sufficiently informed about the fetal anomaly scan (as stated in the NHS FASP consent standards, appendix 2, p 239) Women sometimes describe unrealistic expectations of the ultrasound scan. Dealing with both formal and informal complaints regarding the issue of women's dissatisfaction can cause prospective parents distress, delays in the department's appointments and potentially lead to other women becoming distressed by being kept waiting. These factors may create conflict within the workplace. The key to reducing the possibility of 'conflict' in this situation is the delivery of 'consistency' in communication to women prior to them attending for the scan. Both doctors and midwives have opportunities within the care pathways to provide women with information about obstetric ultrasound imaging and much work has been undertaken by NHS FASP, with the midwifery and ultrasound professions, to support women in their decision making. The area of knowledge that is missing within the existing literature is the evidence to suggest that the medical profession is also actively engaged in providing women with support and information about the application of ultrasound examinations in pregnancy. This study aims to answer the research question: are doctors actively engaged in unbiased information sharing with women about obstetric ultrasound imaging?

An initial search in the literature found that most of the evidence sourced applied to the midwives feelings on dealing with information sharing and tended to fit with the social model of care and that the results appeared to highlight a paradox. On the one hand, many doubted that informed choice could be achieved, whilst on the other hand, many saw the expansion of prenatal screening as an inevitable and uncontrollable process (Williams 2002a). Much work has been and is still being undertaken by the midwifery and the ultrasound professions, through collaboration with the NHS FASP, on improving the aspects of supporting prospective parents in decision-making. However, exploration of the antenatal care pathways has shown that, at several points, doctors also have the opportunity to discuss the role of ultrasound scanning and screening with women, but on searching the literature, there is limited knowledge available surrounding their feelings in communicating information about obstetric ultrasound to women. One study by Williams et al. (2002b) reported that professionals commonly thought that women attended for the scan for two reasons; to 'see' their baby and to confirm that everything was 'normal', but in contrast, professionals recognised that their motives for screening were very different; it was to check for abnormalities. Williams and colleagues' data came from both midwives and obstetricians with some professionals explaining their difficulty in balancing the need to promote pregnancy as a 'normal' time with the delivery of information about fetal screening for abnormalities.

1.1.3 Information-sharing about fetal anomaly screening

Within the antenatal pathway, the role of offering ultrasound screening by the midwifery profession has become standard practice. Midwives work closely with the ultrasound practitioners to provide an effective counselling service under the guidance of the NHS FASP. However, feedback received by Smith et al. (2004) from a group of community

midwives suggested that, as many other issues are raised during the 'booking' visit, they feel that even if they counselled women appropriately, women may not remember everything they have been told from the booking appointment. If the midwives in the study by Smith et al. (2004) feel that women may not remember all that has been discussed at the midwives visit, then in accordance with the antenatal care pathway, a further opportunity for dialogue with the health professionals should be possible during the women's first antenatal clinic appointment. Guidelines from NHS FASP (appendix 2, p 239) are clear in that this opportunity should be available to all women in order to help them make a fully informed decision about whether to opt for fetal ultrasound screening. Some studies also indicate that the knowledge of some midwives who offer screening is sometimes inadequate for the purpose of informing prospective parents (Tyzack and Wallace 2003; Ekelin and Crang-Svalenius 2004). In a more recent study by Skirton and Barr (2010), both parents and professionals overestimated the ability of the screening tests to detect a range of abnormalities, including Down's syndrome and only two-thirds of the midwives in their study cited Down's syndrome as one of the conditions that could be detected using the current screening procedures. Since these studies, back in early 2000, there still seems a similar concern, discussed by Skirton and Barr (2010), that if not all health professionals are fully conversant with the facts surrounding ultrasound imaging capabilities or that women require further information about fetal anomaly screening, then women should have a further opportunity to discuss any issues or concerns before they attend for the scan. At present, in the department that undertook this study, the request for the 20- week scan is generated prior to the women attending the antenatal clinic, and therefore creates the impression of the screening test being not something that requires the women to choose, but rather that it is a test that they have to request to opt out of. The referral for the scan is also included in the women's hospital

notes and received by the ultrasound department prior to the women attending their first antenatal clinic appointment, therefore, the ultrasound department receives the request to generate the screening test appointment before the women have an opportunity to refer any questions or concerns they may have about choosing to opt into the screening programme, with a midwife or doctor in the antenatal clinic. The present system, within this hospital's care pathway relies upon the ultrasound practitioners asking the women, when they attend for their dating scan whether they have chosen to opt for fetal anomaly screening. There is no time set aside to allow women the chance to talk over any concerns and it is often the case that women have presumed that the fetal anomaly scan is standard practice and that they have not realised that they have needed to consider whether to accept or decline the test. It is sometimes the case that when asked, their expectations of the test are at odds with the realistic purpose of the scan being offered. This can create, in some instances, distress for the women as the only opportunity for women to seek further information before choosing fetal anomaly screening is immediately after the completion of their dating scans and as explained, at this point, there is little time available for the ultrasound practitioners to explain in any detail without sometimes causing 'conflict' (a difference in understanding) as well as a delay in the commencement of the next appointment. Within this hospital, ultrasound practitioners are placed in a difficult position of performing scans to screen for fetal abnormality for women who sometimes perceive the scan as more of a 'social experience' and feel undermined when challenged with questions from the ultrasound practitioner, who is required to seek their consent to perform the screening test. This can sometimes lead to a difficult situation where women's expectations are not met and have led, on occasion to 'conflict'. The problem of women appearing unaware about the limitations of fetal ultrasound screening is great as the uncertainties that accompany pregnancy are intensified by the

profound values associated with the creation of new life. The point made by Lupton (1999) that having healthy children is highly valued, and these values may be intensified as women are having fewer children and are waiting until later in life to become mothers. As a result, "children have become viewed as a 'scarce resource', whose success must be ensured"(Lupton 1999, p. 67) Thus, any threat to the health of a fetus can create intense concerns with which parents somehow have to cope. Being informed by the ultrasound practitioner that the use of ultrasound in identifying problems in pregnancy is limited can create a great deal of anxiety, especially if the women are not aware of this prior to attending for the scan. The problem of women attending for examinations unprepared has also been reported in a document by NHS Quality Improvement Scotland (NHS QIS 2004). This report supports the view that women do not feel they have explicitly consented to undergoing screening and do not fully understand the risks or the purpose of the tests. It highlights the need for more research on the issue of how to improve the sharing of information in hope that women may feel better informed when they attend for their scans.

1.2 The role of health professionals in supporting women in decision- making

In the management of pregnancy, health professionals owe a duty of care to an expectant mother and her developing fetus. Apart from ensuring the physical and psychological wellbeing of the mother, they have to protect the fetus. Based on the principles of beneficence and non-maleficence, it is not ethically justifiable for health professionals to perform ultrasound on expectant mothers without medical indications (BMUS 2009). Another duty of health professionals involved in obstetric ultrasound is to ensure that maternal choice is autonomous. The model of autonomous choice should

consist of three elements: threshold, including competence and voluntariness; information, including disclosure, recommendation and understanding; and consent, including decision and authorization (Beauchamp and Childress 2001). In accordance with the principle of respect for autonomy, health professionals have a positive obligation to disclose information, to probe for and ensure understanding and voluntariness of the women, and to foster adequate decision- making. The core set of information should include those facts or descriptions that mothers usually consider to be material in deciding whether to refuse or consent to ultrasound, information the professional believes to be material, and the professional's recommendation. They must educate expectant mothers on the use and safety of ultrasound, so that they can realistically modify their expectations and perceptions. An example of the information that should be relayed to women includes information on the limitations of ultrasound screening for fetal anomalies. The recent expected detection rates for fetal abnormalities during the fetal anomaly scan, given by NHS FASP (2008) are shown in the appendix 4, p. 241. The fact that only 50% of major cardiac abnormalities are identified during fetal ultrasound screening is an example of the type of information women should be made aware of, but it is possible that other health professionals, such as some doctors working within the antenatal setting, may not be aware of these facts.

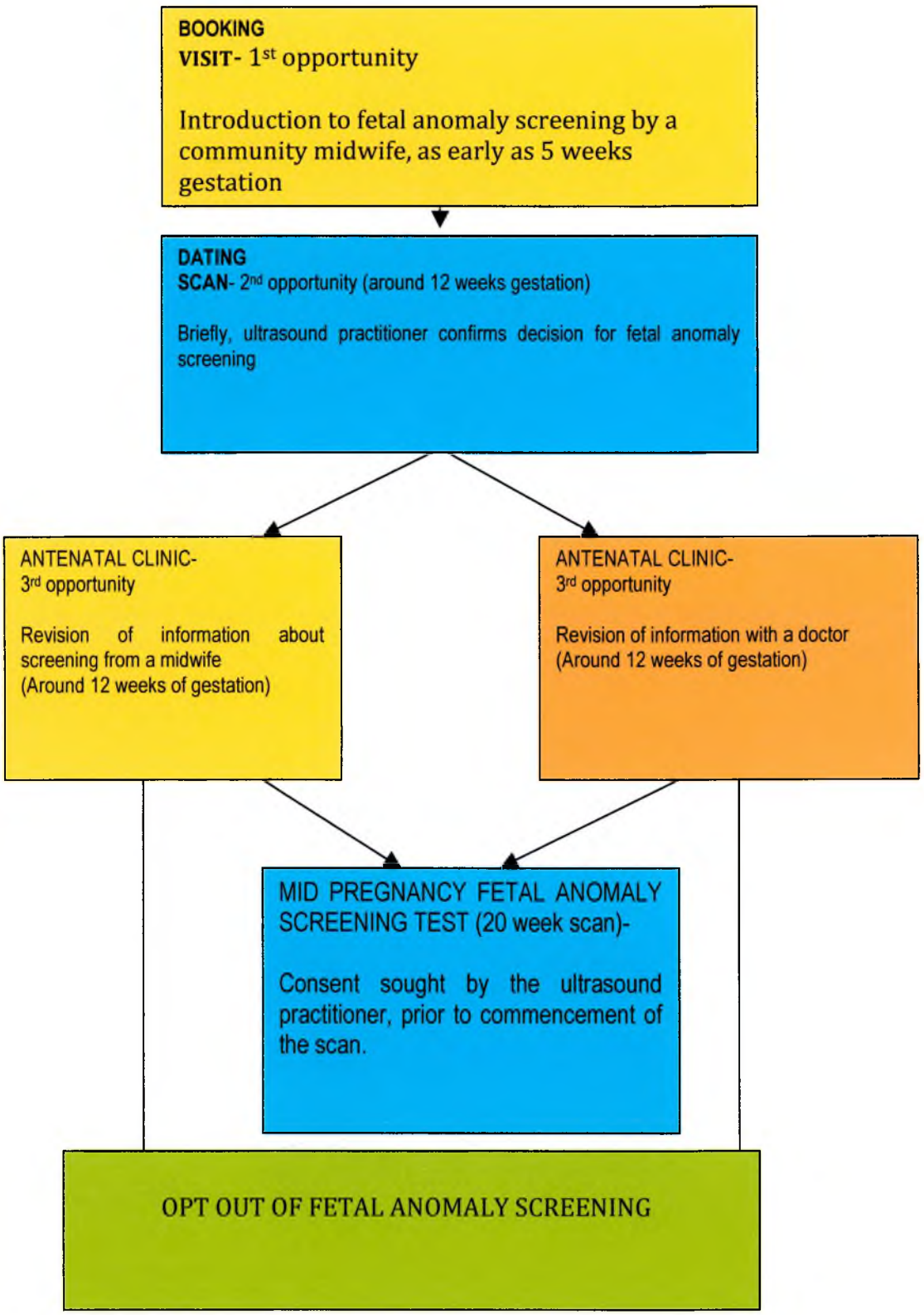
1.2.1 Opportunities for dialogue within the antenatal care pathway

Women accessing antenatal care are visited by a community midwife early in their pregnancy and are given information about various aspects of antenatal care, including information about obstetric ultrasound scanning. An appointment is made to attend for an ultrasound scan to date the pregnancy by measuring the fetal size to establish the expected date of delivery (EDD). This usually occurs around 12 weeks of pregnancy. At this visit to the ultrasound department, women state their decision to opt 'in' or 'out' of the

Down's screening programme and are also asked for their decision as to whether they wish to opt for the 20-week scan. After the establishment of the EDD by the ultrasound scan, women are seen in the antenatal clinic to discuss various aspects of their care in their pregnancy. Between 18 and 20 weeks plus 6 days of pregnancy, women who have opted for fetal anomaly screening (20 week scan) will attend for an ultrasound examination (scan) to screen for fetal abnormalities. It is often at this point in the care pathway when some women seem unprepared for the examination that they have consented to and where conflicts arise. In the hospital's antenatal care pathway, where the study was undertaken, there are three opportunities for health professionals to communicate information about ultrasound imaging, with regard to fetal ultrasound screening (Figure 1 p 25), shows diagrammatically 'when' and which health professional may be involved.

(In figure 1. the term low risk refers to a pregnancy that is anticipated to be problem free. This assessment is based on a woman's past medical, gynaecological and obstetric history and any other relevant issues as the pregnancy continues. A high- risk pregnancy refers to a pregnancy that is thought from the outset to be more at risk of complications before, at or after the delivery. A woman deemed to be low risk could be cared for by midwives and family doctors. However, high-risk pregnancies may require consultant care with regular visits to the hospital. An initially low risk pregnancy may become a high risk one at any time.)

Fig 1. Diagram depicting the opportunities for health professionals to discuss fetal anomaly screening



At some point in the pathway, women will find themselves in consultation with a midwife, an ultrasound practitioner and/or a doctor and in order to establish whether doctors are engaged in information sharing, this study aims to explore their experiences of offering obstetric ultrasound to women. At a seminar in the early 1980s, someone asked a popular obstetrician and professor at Georgetown University, "What are the three most significant technological advances in obstetric and gynaecology in the last 30 years?" The answer came quickly from Dr. John T. Queenan: "*Ultrasound, ultrasound, and ultrasound*." By then- and since then even more -this diagnostic modality has transformed the practice of obstetrics and gynaecology, not to mention its effect on other specialties (Abramowicz 2010).

1.2.2 Fetal anomaly screening (20-week scan)

The screening emphasis has increased in recent years, so that it takes considerable time and attention if tackled with any regard to informed choice (Pilnick 2004). The Maternity and Newborn clinical pathway group recommended that the quality and consistency of information for pregnant women should be improved (Yorkshire and Humber 2009). As Pilnick (2008) states, while there has been much discussion and debate about informed choice in health services, very little attention has been given to 'how these policies are practically applied and how they are talked into being'. A report by Watkins and Hamilton (2008) for the Maternity and Newborn Clinical Pathway Group (CPG) summarised their findings in the need for a code of behaviour for staff within organisations linked to customer service training. Included within this it is recognised by the members of the CPG that it is important to determine the needs of women rather than assume that health

professionals know what women want. Within the department's antenatal care pathway, the communication of antenatal screening is overseen by the midwifery and medical professions; however, the examination and the ultimate responsibility for reporting of the findings of the ultrasound scans to the women lie with the ultrasound professionals carrying out the examinations. Confirming that women understand the purpose of any ultrasound scan is an important first step towards seeking consent. Experience in the field of obstetric ultrasound imaging suggests that some women see the ultrasound scan as primarily, a social experience for their family to 'see' the baby and find out the 'fetal sex' (Williams 2002a), rather than its actual role which is to screen for fetal abnormality and others who may identify the true purpose of the scan often have little knowledge of its limitations in identifying fetal abnormalities. In these situations there is much time spent explaining to the women the purpose of ultrasound screening and the limits to which problems can be visualised. This extra time before the examination is rarely available and can cause delays in the department's appointment system. There can be many appointments for fetal screening within the workload and the need for women to discuss the implications of opting for screening can cause a delay, but more importantly, can also cause the women distress as their initial expectations of the examinations may not always be met. This feeling of the need to improve the information sharing process within this hospital has exerted a motivation to look at how women receive information from doctors within the care pathway, prior to attending for ultrasound examinations. This need to improve the service is one of the three key attributes of clinical governance: - recognisably high standards of care, transparent responsibility and accountability for those standards, and a constant dynamic of improvement (Scally and Donaldson 1998).

1.3 Maternal perspective on obstetric ultrasound

Understanding maternal perceptions, expectations and knowledge of obstetric ultrasound is cardinal in this ethical analysis. Many studies have revealed that ultrasound is a very attractive proposition to pregnant women (Garcia et al. 2002). This may be due to three elements provided by the scan: - 'meeting' the baby; having visual confirmation of the reality of pregnancy; and gaining reassurance about the wellbeing of the fetus (Clement 1998). However, pregnant women may have feelings of anxiety, shock and disappointment when the scan shows a problem (Eurenius et al. 1997). Regarding knowledge about obstetric ultrasound, studies have shown that there is some deficit in women's knowledge concerning indications (Dixon 1994), safety (Kohut at al. 2002) and the diagnostic capabilities and limitations of the procedure (Lalor and Devane 2007). Some researchers have related this to inadequacy of the information they receive during consultation (Kohut et al. 2002; Proud and Murphy-Black 1997). The amount of information given to expectant mothers is closely linked to the knowledge and attitude of the health professionals. It is clear, within the working standards developed by FASP followed by midwives and ultrasound practitioners, what information should be offered to women and in this study the aim is to consider whether doctors are active agents in the process of information sharing about ultrasound examinations with women.

To make the issue more complicated, some studies have shown that most women have expectation exceeding the purpose and ability of the examination (Lalor and Devane 2007). Before the routine use of ultrasound, the first outward signs of pregnancy were the "quickening" which usually occurred at around 16 weeks. Duden (1993) based her observations upon women's sensory experiences, but in contrast, with the evolution of ultrasound technology, the knowledge of being pregnant has changed to a "visual"

experience and one that is to be shared by the public. There is evidence that clearly demonstrates that women are particularly vulnerable in a hospital setting, primarily due to the hegemonic gender beliefs that are embodied in public institutions (Eagly, Wood and Dickman 2000) which create "power relationships and influence the behaviour of both the health professional and the woman during the consultation. In the field of obstetrics, as in many areas of medicine, doctors often grapple with uncertainty in making difficult decisions. Medical science offers incomplete knowledge of fetal development and physical functioning, a fact regularly demonstrated in litigation claims. The obstetrician cannot master the entire body of medical knowledge. Rather than searching for the one absolute truth regarding a mother's situation, he or she must deal with probabilities and then render a professional judgment that carries legal liabilities. It is possible that the routine use of ultrasound has created false expectations, that by having repeated screenings it may give the illusion of perfectibility, but like most medical assays, ultrasound is imperfect, as demonstrated by NHS FASP detection rates (appendix 4, p 241).This, as well as the in built need of "visual " proof of pregnancy (Duden 1993) may combine to act as an obstruction to achieving informed choice. In addition, the medicalization of childbirth may add to the reason why women comply and as Nicol (2007) states, as individuals, women have to create the reality of their pregnancy from the abstract, with a need to conform to their social and cultural expectations and be open to surveillance. To achieve this, they are forced to comply with medicalization of their pregnancy and problems that are associated with this.

1.3.1 Medicalization of pregnancy

In many ways the modern world is risk averse. More and more we believe we can prevent, manage and control risk and risky situations and if we cannot we seek legal redress. It is no surprise then that contemporary midwifery is largely governed by risk assessment and systems that are driven by clinical governance (NHS QIS 2005). Midwives assess women and allocate them into evidence-based risk categories (Scottish Executive Health Department (SEHD) 2002 and NHS Quality Improvement Scotland (NHS QIS 2009) and by doing so, influence the choices available to women throughout pregnancy and, most notably, around birth. This development of risk management systems is often explained as a result of the increasing risk of litigation in health care (Crawford 2004; Skinner 2008). Although risk management can be interpreted as supportive of development of midwifery care for low risk women (SEHD 2002) Dowie (1999) argues that it has restricted rather than progressed how we deal with critical incidents, whereas others (Benoit et al. 2005) suggest that risk management may have contributed to the slow implementation of UK policy which advocates normality and midwife-led care (SEHD 2001; SEHD 2002). The development of ultrasound imaging has contributed considerably to an increasing 'medicalization' of pregnancy, and has developed into a highly sophisticated method allowing detailed visualisation of the growing fetus. Ultrasound is employed for a variety of reasons such as determining malformations and monitoring fetal growth and wellbeing. Over the twentieth century, as our society became more aware of risk, there has also been a movement from a social to a medical model of maternity care. Mackenzie, Bryers and Teijlingen (2010) argued that the latter change occurred in parallel with wider medical, economic and political reforms and that as state-organised health services developed over the past century, the concept of risk and risk management became a central tenet of care. The idea of risk is based on

the understanding that populations in communities and as individuals require to be measured, managed, and protected to maximise productivity, wealth, health and welfare (Foucault 1991). The view that childbirth is risky fits within this ideology and this has brought about a culture of managing pregnancy and birth (Alderson et al 2004). In maternity care, De Vries (1993 p.141) argued that professional groups gained control by 'creating' risk – that is by emphasizing risk, by redefining life events as 'risky'.

- **The research question**

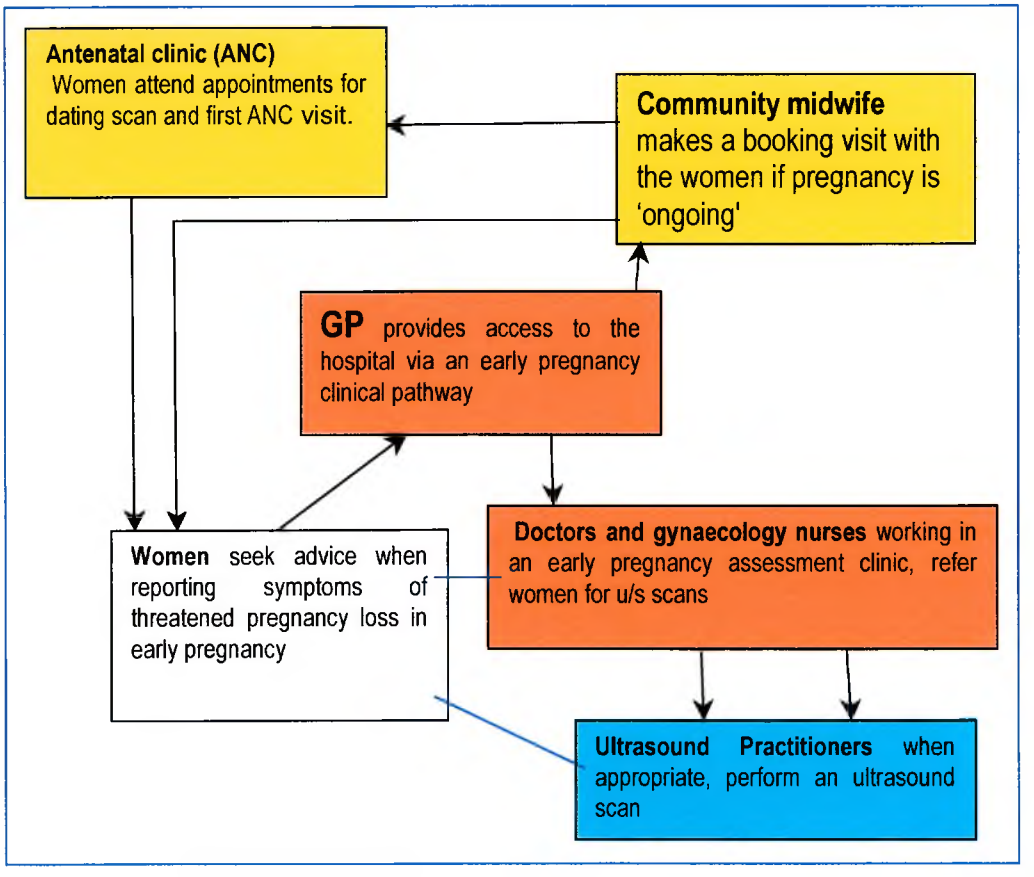
Within this study, exploring what information is shared by individual doctors and prospective parents, in comparison to how information is shared by midwives, may only provide part of the answer to whether doctors are actively sharing unbiased information, as there may be a key difference between the subconscious practice of the two professional groups due to a key difference between social and medical models from gender-based practice, which essentially sees medicine as male and midwifery as female (Williams 1997). The medical profession and its scientific philosophies are gendered male by their history and development, and this situation is not altered by the presence of female doctors. The profession of medicine is masculinist in that it is considered objective and objectivist, rational and measurable, and female doctors are socialised through their training into this mode (Davis-Floyd 1990). Mason (2000) considers that male thought is predominantly equated with scientific thought and from a political standpoint, this situation appears to have been exacerbated by the governmental tendency to allocate power to doctors in the management of health and reproduction, thus creating a cultural norm of high-tech medical management of pregnancy and birth. Graham and Oakley (1986) stress that the medical and social models' perspectives on maternity care do not just contradict each other; they can be in conflict. This is partly due to each professional group having a different system of values and attitudes through

which pregnancy and childbirth is assessed. However, Porter (2000) believes that not all midwives adhere to the social model and not all doctors to the medical model, but that along a continuum of practice from midwifery to obstetrics, all working practice is somewhere in between. Within this study, it may show that this is an obstacle to overcoming the research problem.

1.4 Opportunities for information sharing via the hospital antenatal care pathways

Care Pathways coordinate the care of all the health professionals having them all working toward common goals or outcomes for the women and two such pathways in the care of pregnant women are important in this study: a referral pathway for women accessing care with symptoms of suspected pregnancy loss or early complications (figure 2, p 33) and the routine pathway for antenatal screening in pregnancy (appendix 3, p 240). There are several situations where midwives, doctors and ultrasound practitioners can offer information about the use of ultrasound imaging in both pathways. When women are referred for complications in early pregnancy, the hospital provides support through an early pregnancy assessment care pathway, that is a nurse led service, accessible by referral from a GP, community midwife or the hospital accident and emergency department. The doctors work alongside nursing staff to provide medical care and give support to women who have symptoms that may indicate a threatened miscarriage or other related pregnancy problems. Through the development of a dedicated clinical pathway, ultrasound forms the main basis for the initial diagnoses.

Figure 2 Referral pathways for women with early pregnancy complications



This referral pathway (figure 2) demonstrates the opportunity health professionals have to participate in dialogue with women (demonstrated by the blue lines) about the benefits and limitations of ultrasound imaging when they present with early pregnancy complications. Campbell et al. (1998) stated that one of the aims of implementing a care pathway is to 'improve clinician-patient communication and patient satisfaction', however, as described earlier, some women do not seem adequately prepared for ultrasound scans when they attend for their appointments, which raises the question, 'are the opportunities for dialogue with the women within the existing antenatal pathways effective? In 1997, Clement et al. (1998) examined a range of methods of providing antenatal care, with the express aim of meeting women's psychological needs. They

identified three strands of material: antenatal psychological need, information and support, and reassurance. They argued that the professional emphasis of routine antenatal appointments was often non-medical issues where women needed time to ask questions, be reassured about symptoms and think through concerns. This study aims to look at what information is offered by doctors during their consultations about the ultrasound scans women are required to consider.

1.4.1 Opting for prenatal tests

Prenatal tests of which ultrasound is one, can help identify and sometimes treat health problems that could endanger both the mother and the unborn child, however, they do have limitations. Prenatal testing is further complicated by the fact that approximately 250 birth defects can be diagnosed in a fetus — many more than can be treated or cured (Birth Defects Centre Research 2003). Garcia et al. (2002) concluded that the one key finding for clinicians was the need for all staff, women and partners to be well informed about the specific purposes of ultrasound scans and what they can and cannot achieve. A survey by Green (1994) highlighted by Michie et al. (1999) in their paper that investigated how women make the decision to have prenatal screening found back then that 25% of obstetricians said that their policy was to give a serum screening test routinely without offering women any explanation of its purpose, or any choice about whether or not they participated in the screening program. In light of this, a search for more recent obstetrician's views and protocols on offering ultrasound examinations found little information, except with regard to non-clinical 3D scanning, promoted by private companies and individuals of which some advocates were obstetricians (Campbell 2004). There is a large volume of data in the literature reporting the write up of case studies for a wide range of fetal abnormalities. However, all the studies identified

described a quantitative methodology, demonstrating the identification of fetal abnormalities with no studies undertaken that provided an in depth account of doctors' experiences of their role in offering ultrasound to women in obstetrics. As explained, NHS FASP (appendix 2, p 239) provides standards that require all health professionals to provide unbiased information and support. However, there may be difficulty with different professional groups working together here if they have differing perspectives on antenatal care as the doctors approach may be perceived as bound by the medical model of care, where as the midwives approach may be described as delivering care via a social model. Mackenzie, Bryers and Teijlingen (2010) use Oakley's (1999) description of the social model as founded on the idea that childbirth is a natural physiological event: that is, the majority of pregnant women will have a normal and safe childbirth with little or no medical intervention and that those women who are not expected to have a normal childbirth can be predicted and selected and that both Graham and Oakley (1986) recognised that whereas the birth of a healthy baby is a priority, it was also important to consider the experience of the woman in childbirth. From this perspective, informed decision making by prospective parents is paramount in conforming to the social model of care. From the perspective of the medical model, childbirth requires medical control over and monitoring of the situation in order to guarantee safety. If the doctors' ideas of concept and practice on ultrasound use fits with the medical model then they may feel uncomfortable with the idea of providing prospective parents with the option to decline ultrasound scans such as fetal screening. By the nature of their profession, doctors may see ultrasound testing as an important part of pregnancy and may consider it a vital tool for delivering a healthy baby. The results of this study may identify how true this statement is. However, the difficulty surrounding fetal ultrasound screening lies in the fact that the ultrasound practitioner is conscious of trying to fit with both models of care during

the examination. On the one hand they have to perform a screening test (fitting in with the medical model) whilst adopting a social model of care in direct response to the prospective parents questioning and their ultimate decision-making.

1.4.2 Defining the Research Question

Due to a gap in the present knowledge surrounding doctors' experience of offering obstetric ultrasound to prospective parents, the focus of this study has been to explore the medical perspective on obstetric ultrasound use, to determine whether doctors are active agents in providing women with unbiased information on routine ultrasound imaging. The aim of the study was to consider whether any changes may be made to the current working practice, at the hospital that undertook the study, in order to help women feel better prepared for the antenatal ultrasound scans for which they opt.
The research method involved analysis of data from in-depth qualitative interviews taken from doctors working in the hospital antenatal department to understand their experiences about the role of ultrasound imaging. It was not within the remit of this study to debate the strengths and weaknesses of ultrasound use in obstetrics, nor was it aimed at attempting to influence the ultrasound referral process.

The distinction between this doctoral project and other previous research is reflected by the fact that it is a qualitative study that reflects the medical perspective about the realities of using ultrasound examinations in a maternity setting. Through exploring the medical perspective, this work aimed to explore the possibility of making changes to professional practice within one hospital's antenatal service, in order to improve the process of information sharing with women about obstetric ultrasound examinations and

attempt to reduce the number of 'conflict' situations occurring, within the ultrasound department, such as the 'encounter' described in the introduction

Conclusion

This chapter has considered the motivation behind undertaking this study and the context and evidence, which generated the research question. It has highlighted a difficulty in obstetric ultrasound provision, through exploration of 'an encounter' and from an initial review of the related literature, it has revealed a need to consider how women are informed about the uses and limitations of ultrasound imaging. This has identified a research project that explores the role the doctors play in women's decision making, when opting for obstetric ultrasound examinations. Through a qualitative study, doctors experience of discussing obstetric ultrasound examinations with prospective parents, is explored, with the aim of providing knowledge to inform future discussions over improvements to practice and collaborative working amongst professionals working in antenatal care. In order to consider changes to the practice of information -sharing about the purposes of ultrasound scans, it has been considered useful to explore the doctors' experiences in order to debate whether the changes that may be recommended, will in fact reduce the chances of 'encounters' (misunderstandings) arising in future practice.

Following Kolb's cycle of learning (1984) (appendix 1, p 238) a personal reflection, on the encounter described earlier in this introduction, was undertaken (appendix 5, p 241) and from this key points (typed in bold text) were drawn and formulated into three broad areas identified for the initial literature review. The next chapter considers these three searches of the literature: - women's expectation and views on ultrasound use in

obstetrics, the professionals' role in information sharing with women and the development of obstetric ultrasound imaging.

Summary of Chapter One- Background to the study

Ultrasound practitioners are faced with the problem of some women consenting to ultrasound imaging with no real idea of the purpose or more importantly, its limitations. Prospective parents interact with a variety of health professionals along dedicated antenatal care pathways, where each interaction may have some influence on what and how much information women receive about prenatal ultrasound.

The decision to undergo an antenatal ultrasound scan is up to the individual. The duty of health care professionals is to provide pregnant women with up to date information to allow them to make a fully 'informed choice', however, some literature suggests that not all women feel they have explicitly consented to undergoing ultrasound imaging and do not fully understand the purposes or limitations of the scans.

A review of the literature has revealed a gap in knowledge surrounding the role of the doctors in communicating information about obstetric ultrasound to women. It is therefore the focus of this study, to identify the doctor's perspective on obstetric ultrasound, with the aim of understanding whether they act as agents in unbiased information sharing about obstetric ultrasound imaging, with prospective parents. The aim is to fill this gap in existing knowledge and explore whether changes to working practice within a hospital, may better support women as they make decisions about ultrasound imaging in pregnancy.

Chapter Two- Literature Review

Introduction

An important part of designing this study was the investigation of existing knowledge and current research surrounding the workplace problem. Due to the vast store of knowledge that had been accumulated, it was important to understand what knowledge was relevant to the research question and the need for thoroughness in searching the existing literature. In order for the search to not be a haphazard one, a research strategy was used that was most likely to provide depth and scope to the acquisition of related knowledge. This chapter focuses on the literature, which substantiates the research study. In light of the research question, an in depth search was undertaken using keywords generated from the researcher's reflection (appendix 5, p 241) on the 'encounter' on which the research question was based. Section One describes the search process that was undertaken. Section Two explores the literature surrounding women's perception of the use of obstetric ultrasound in pregnancy. Section Three considers the health professionals' role in providing information supporting women in informed decision making. Section Four describes the development of obstetric ultrasound, and the chapter concludes with a description of the gap in the existing literature regarding the medical perspective on the role of sharing information about obstetric ultrasound with prospective parents.

2.1 Conducting the literature review

The following process was used:

Selecting the databases Using the Sheffield Hallam University Literature Search facility and applying a range of key words into the subject area of Health and Social Care

(subcategories- Evidence Based Practice and Nursing and Midwifery. The following databases were selected:

CINAHL (EBSCO), Medline (OVOID and CSA), Cochrane Library, Web of Science, PubMed Central, ScienceDirect (Elesevier), Oxford Ref Online Premium, British Nursing Index, AMED, ASSIA, Mat and Infant care (OVOID), SHU Catalogue.

Kolb's work on experiential learning was used as a framework to identify the research question from the initial workplace problem.

Experiential learning theory (ELT) describes learning as a process whereby knowledge is created through the transformation of experience (Kolb 1984). Knowledge results from the combination of grasping and transforming experience (Kolb 1984, p 41).

Emergent themes/areas of consideration (taken from the reflection, appendix 5, p 241)

- Women's expectation and views on ultrasound use in obstetrics
- Health professionals' role in offering ultrasound scans and information sharing with women.
- The development of obstetric ultrasound imaging.

2.1.1 Selecting keywords

The initial literature search was undertaken both electronically and manually, using the keywords generated from the reflective writing, following Kolb's cycle of learning (appendix 1, p 238). Search terms used, included: - **fetal wellbeing, ultrasound, reassurance, pregnancy, obstetrics, women's views, decision-making and informed choice** (examples of some of the searches are given in the appendix 6 (p

243). These terms generated a large amount of literature, which included a systematic review (Garcia et al. 2002) of the views expressed by women on ultrasound use, which provided an appropriate starting point for the consideration of the data. When the searches returned a large number of hits more refining was needed and the searching was often repeated with the keywords only being identified from the title or the abstract. Once a workable number of returns had been identified, these were critiqued using Greenhalgh's (2006) checklist (appendix 7, p 244) and the relevant articles stored. From some of the articles further follow up of similar more recent articles, cited through the searching facility, were considered, and if deemed appropriate, were also stored electronically. All stored article references were exported to *Refworks,* the electronic reference manager, for future compilation of the reference list.

2.1.2 Critiquing the literature.

All articles or literature on the relevant issues were subjected to a critique of the research process, which initially included noting the journal in which the articles were published and the editorial board that oversees peer review of the published articles. Studies/articles were evaluated for the quality of evidence offered by evaluating the conceptual and methodological decisions the researchers made to produce evidence of the highest possible quality. Quantitative studies were assessed on their *scientific merit*, (Bryman 2004), two of the most important criteria being reliability and validity. Ecological validity, which is concerned with the question of whether social scientific findings are applicable to people's everyday natural social settings (Bryman 2004) was at the forefront of this critique as research on humans cannot be totally void of their surroundings. Qualitative studies, on the other hand, were assessed on the trustworthiness of the studies' results. The papers selected from the systematic review, with consideration on the inclusion and exclusion process have been included in a table

in appendix 8 (p 246). The systematic review by Garcia et al. (2002) and other qualitative studies discussed in this literature review were assessed for methodology quality using Greenhaulgh's (2006) checklists for critiquing published papers.

Following from the initial data uplifted from the Garcia et al. (2002) systematic review additional key words such as: **expectation, compliance, views of obstetricians, doctors views and Green top guidelines** were then employed to widen the literature search in order to establish what knowledge was available regarding other the views of other professionals as well as guidelines and policies about the use of ultrasound in obstetrics. Later searches incorporated key words relating to ultrasound technology and development.

2.1.3 Additional parameters

Where the databases allowed for other restrictions then the following parameters were set:

- Last 15 years to achieve a search that would be most relevant (except the searches looking at the historical developments of ultrasound imaging and the techniques capabilities)
- UK, European and American sources (English only) and in some instances where location, culture and practice were deemed relevant.

Initially, three aspects of the reflection of the 'encounter' were identified and information searched in the literature under the three headings: women's expectations and views of obstetric ultrasound, the health professionals' views on obstetric ultrasound use and the development of obstetric ultrasound.

The table in appendix 9, p. 260, outlines the search strategy undertaken. The literature relating to the three themes have been considered individually below.

Within the reflection on the 'encounter' with the woman attending for fetal anomaly screening, one of the issues that arose concerned the need to explore what women expect from ultrasound scanning in pregnancy and the following section provides an overview of the literature searched.

2.2 What women expect from ultrasound imaging in obstetrics

Garcia et al. (2002) performed a systematic review, which was commissioned from a larger study of clinical and economic aspects of routine antenatal use. This provided a thorough evaluation of ultrasound use from the women's perspective (evaluating over 200 papers) up to 2002 and focused on 'what ' women know about reasons for using ultrasound and' what' a scan can do. It reviewed 'what women liked about ultrasound and how it was performed. The most striking finding from this review is how ultrasound imaging is very attractive to women and their partners. The review concluded that the attractiveness might be because, unlike other forms of prenatal testing, it provides them with their first visualisation of their unborn child and gives them reassurance about fetal wellbeing. Gudex et al. (2006) also investigated what reason women gave for requesting prenatal ultrasound in the absence of clinical indications and concluded that they had specific reasons that are influenced by socio demographic, obstetric and attitudinal factors. Their study of 370 pregnant women investigated their preferences by examining the relative importance given to different reasons for wanting ultrasound scans. The three most important reasons most frequently identified were to check whether the baby had any abnormality (60% of women), to see that all was normal (55%) and for own

reassurance (44%). Their study found that background characteristics and attitudinal factors might play an important role in determining their preferences for ultrasound in normal or "low risk" pregnancy. Kohut et al. (2002) also reported that many women did not view ultrasound in pregnancy as a screen for abnormalities and gave non-medical reasons for desiring and requesting ultrasound examinations, such as to see the baby and to experience the pregnancy and to determine the sex of the baby. Contrary to this, Larson et al. (2000) explored women's background knowledge, expectations, experiences and acceptances of ultrasound screening and in their conclusion thought that women had a good knowledge of the examination, their expectations were fulfilled and were clinically relevant. They reported that the acceptability and experiences of the examination was very high. However, in the same year another study by Baillie et al. (2000) reported that expectations of ultrasound scans were positive and derived from a social construction of its purpose.

Another area of consideration highlighted in the reflection on the encounter related to the importance of the ultrasound scan to women and how it plays a significant role in their expectation of the experience. Kohut et al. (2002), in their study mentioned earlier, described how women perceived ultrasound as a way of experiencing pregnancy and how they attached no real medical reasons to wanting the scans. Looking at the reflective account considered after the "encounter" (appendix 5, p 241), in this instance the reason for attending for the scan seemed to be related more to the woman's desire to experience her pregnancy rather more than to consider the physical condition of the fetus.

2.1 Psychological aspect of obstetric ultrasound

The importance of psychological well being during pregnancy is paramount. Antenatal psychological distress has been linked to postnatal psychological distress (Green 1990)

and antenatal depression and antenatal anxiety are both significant predictors of postnatal depression. Many antenatal interventions can themselves create anxiety in women. Baillie (2000) found that two thirds of women identified by ultrasound screening as being high risk continued to experience residual anxiety about their pregnancy even after being reassured by a negative diagnostic result. A study by Searle (1996), reviewed the issue of why pregnant women felt "at risk" during pregnancy. Their results showed that, routine antenatal screening tests were identified by the participants as the most effective factor in reducing the levels of fear and anxiety experienced throughout pregnancy, with ultrasound being highlighted by 55%. The results of their study also showed that women's perception of their own risk of having a baby with an abnormality was out of proportion to the actual risk and to their perception of what the actual risk was. The study demonstrated that the majority of women underestimated the actual risk of having a baby with an abnormality, yet were anxious that their own baby would be abnormal. Stephens et al. (2000) listed the reasons for 135 women, deemed 'as having a 'low risk' pregnancy, gave for wanting a prenatal ultrasound examination. The most frequent reasons were: to determine the fetal sex (33%), to determine the health of the fetus (27%), to determine the growth of the fetus (9%), for reassurance (9%) and to see the baby (3%). In a study by Gudex, et al. (2006) they described the reasons most frequently identified as important for women wanting ultrasound examinations were: to check for fetal abnormalities (60%), to see that all was normal (55%) and for own reassurance (44%). Women in their first pregnancy were more likely to want themselves and the father to see the baby; women who had given birth previously were more likely to have wanted reassurance, as were women with a previous miscarriage or induced termination.

Two important issues are seen from these studies; the need for visualisation of the unborn child and reassurance that all is well. As written by Kelves (1997):

> *Since the 1970's, ultrasound rapidly has become part of the diagnostic Checklist for heart and kidney diseases, brain and eye disorders and vascular problems, but only in obstetrics has it become a cultural as well as a clinical necessity.*
>
> (Kelves 1997, p 230)

Women all over the world have come to expect to see their fetuses. Duden (1993) a female historian wrote:

> *'In one generation, technology along with a new discourse has transformed pregnancy into a process to be managed, the expected child into a fetus, the mother into an ecosystem, the unborn into a life, and a life into a supreme value'.*
>
> (Duden 1993, p 93)

Duden's field was in teaching and research priorities in the history of experienced body. She explained that it is the fact that pregnancy is intensely medicalised, with its character and quality diagnosed, its progress seen in relationship to a physician necessarily produces an aura: the woman is led to think of disease, handicaps, intervention, cure, interruption'.

The second point that emerged from the systematic review, by Garcia et al. (2002) was the need felt by women and their partners for reassurance of fetal wellbeing. In terms of reassurance, Eurenius et al. (1997) found that often women had displayed a misunderstanding of ultrasound's capability; typically expecting more information than the technique was capable of providing. Antenatal ultrasound scans have shown to have

psychological sequelae (Seeds 1996) from providing reassurance about fetal wellbeing to shattering hopes of a healthy pregnancy. It is recommended that detailed information about routine ultrasound and additional diagnostic tests that may be required are provided before the examination as any misunderstanding of capabilities and limitations of the examination can lead to expectations that may exceed that which the technology is capable of delivering (Proud 1985; Eurenius 1997). Furthermore, even after much work has been undertaken by the professions to provide good information and support for decision making with regard to the use of ultrasound, the inherent value of decision aids, for example MIDIRS and NHS FASP information leaflets, is unclear as O'Connor et al. (1999) found in their study that such aids assisted decision making in health care but that O' Cathain et al. (2002) found that their use did not alter the proportion of women who reported exercising informed choice.

2.1.2 Obtaining reassurance in pregnancy

It is difficult to see how ultrasound in prenatal care can provide reassurance as all the improvements in ultrasound machinery and earlier detection of abnormal structures in the fetus have also brought along "false positives" and "difficult-to-be-sure diagnosis" (Saari-Kemppainen et al. 1990) that generate much undue anxiety in women. As important as the question of what ultrasound can reveal is the question of what it cannot reveal. Even the most experienced practitioner equipped with a sophisticated instrument cannot show everything, at best ultrasound equipment reveals 65% of all potential aberrations, which means that 35% of fetal defects remain invisible on the scan (Dijck 2005). As Dijck explains," ultrasound does not guarantee certainty; innovations in technology engender new liabilities, new uncertainties, and thus new anxieties".

There have been many studies concerned with the term "risk" in screening tests. Searle (1996) makes the point that the term "at risk" has come to mean a variety of things to

people depending on the user's perspective and the use of the word once was neutral, but has now evolved over time to infer negativity or an adverse outcome. Over the twentieth century, as our society became more aware of risk, there has also been a movement from a social to a medical model of maternity care. It could be argued that the latter change occurred in parallel with wider medical, economic and political reforms and that as state-organised health services developed over the past century, the concept of risk and risk management became a central tenet of care. In maternity care, it can be difficult to separate objective and subjective risk. Clinical decision-making relies on the verbal, visual and intuitive information available to the practitioner and the way this is interpreted and acted upon by that individual. It should be born in mind that prenatal ultrasound cannot diagnose all malformations and problems of an unborn baby (reported figures range from 50 to 98%, NHS FASP, appendix 4, p 241, so one should never interpret a normal scan report as a guarantee that the baby will be completely normal. However, Searle's findings, in 1996, demonstrated that women hope that normality will be confirmed but that they still had underlying fears that the ultrasound would detect abnormalities. Searle (1996) suggested that expectations of women were closely aligned with those of antenatal care providers who offered screening tests with the object of detecting abnormality. Later (p 51) the knowledge of health professionals' thoughts about ultrasound scanning is considered within the context of the literature sourced during this search.

Detection of abnormality is consistent with the medical model of pregnancy and Searle (1996) considered that her study demonstrated that this factor, of adopting the medical model, played a dominant role in influencing the perceptions of women and their families in antenatal care. What is the role of antenatal screening? The presence of fears and perception of risk during pregnancy generates the need for reassurance. One of the

ways reassurance is sought is through the utilisation of routine screening tests. Enkin (1982) saw this as a way of taking out insurance and it is this need for reassurance that in part determined women's use of the routine tests. It was the women's belief in the value of and reliance upon these tests that sustained their use. Searle (1996) described that what has developed is a reliance on technology and expertise to ensure safe pregnancy and a normal baby. Literature on the motivation of women, who were living in the USA, to accept screening indicated that some did so to reduce their anxiety about the pregnancy (Sturm and Ormond 2004). However, because this type of screening relies on assessment of indicators of risk rather than direct diagnosis, false-negative and false-positive results are possible. In effect, this means that some of those women who received a high-risk result will have had a normal fetus, whereas some pregnancies, where the fetus had Down's syndrome, would have been assessed as low risk. Therefore, some women would have been falsely reassured by a low-risk result, especially if they have not understood the nature of screening as opposed to diagnostic testing.

Thorpe et al. (1993) explained, when they compared women's experiences of antenatal ultrasound, that the reassurance sought through scanning depended not on the ultrasound image per se but on the expectation created and the interpretation that had been put onto it. This paper led the literature search to examine professionals' roles in the provision of ultrasound in pregnancy. Earlier in the last chapter details of how and when women are offered ultrasound scanning was described, however, an important area of consideration still to be addressed is the search for knowledge on the views of professionals on the role of ultrasound scanning and this has led to the second search in the literature.

2.3 The professionals' role in information- sharing with women.

Doctors, midwives and ultrasound practitioners all play a part in providing ultrasound services to women within the antenatal pathway. As described earlier, Searle (1996) suggested that the expectations of women were closely aligned with those of antenatal care providers who offered screening tests with the object of detecting abnormality. Literature has been explored in order to provide a picture of the professional's perspective on ultrasound use in obstetrics.

2.3.1The views of midwives on obstetric ultrasound

Information regarding the midwives' views on obstetric ultrasound use has been limited with only a handful of studies depicting their true personal feelings. Most search attempts highlighted studies that were conducted by midwives but that were focussed on understanding expectations of women on ultrasound imaging. One study by Entwistle et al. (2008) considered the way ultrasound tests were communicated to women. Although the authors were predominantly involved in the development of public health, they were experienced in developing, evaluating and critically thinking about information resources relating to screening. They appeared to understand the difficulties of regulating communication of information of this nature and appreciated that it was unclear how health professionals should have communicated about screening in order to have supported 'appropriate' uptake. They described the problem that it was difficult to define what was appropriate because of disagreements about the merits of particular tests and the tensions between concerns to promote health and to respect autonomy. They

defined, in their work, the two ways that communication had been debated as 'be screened' and 'analyse and choose'. The 'be screened' approach aimed to persuade people to have screening usually with a view to promoting health gain, cost effective service provision, or profit. The 'analyse and choose' approach emphasised respect for autonomy and treated this as a matter of ensuring that competent individuals had sufficient understanding of their options and were able to make intentional, sufficiently independent choices. In a systematic review of the literature on antenatal screening and parental choice, Skirton and Barr (2007) analysed twenty research-based papers on this topic. The main findings were that there was a danger that parents and professionals regarded the screening tests as routine, and therefore not requiring a decision. Although parents did wish to have information about screening, their level of knowledge was not always correlated with uptake of screening. In addition, the authors concluded that health professionals, usually midwives, were not always adequately prepared in terms of knowledge, skills or attitudes to offer screening in ways that facilitated informed choice for parents. Neither of the two approaches above considered the importance and interests and trustworthiness of those who offered and advised about screening. This failing, together with recent evidence about what patients value about communication with health professionals and involvement in decision making, has led Entwistle et al. (2008) to suggest a third approach to communicating about screening. Their 'consider an offer' approach, they believe is designed to respect personal autonomy without overburdening people with unwanted information and without deterring uptake of personally appropriate screening. They openly explained and discussed the basis for the offer; encouraged and facilitated an individual assessment; provided access to further information if that was required and acknowledged that the offer may have reasonably been refused. The midwifery perspective, on issues surrounding the communication of

information about ultrasound screening, has been evaluated by Ekelin & Crang-Svalenius (2004). The results of their study, undertaken in Sweden, demonstrated that most of the responses to midwives' education, knowledge and their own opinions of their ability to inform women about ultrasound were positive, although a number of midwives felt that, in general, information about fetal diagnosis was a difficult part of their work. They highlighted the need for continuing education, standardised policy and on going ethical debate. A study in the UK by Williams et al. (2002a) considered the views of midwives about genetic developments and moral beliefs and values and how they affected their daily work. Their results appeared to highlight a paradox. On the one hand, many doubted that informed choice could be achieved, although they saw it as an essential part of prenatal screening. On the other hand, many saw the expansion of prenatal screening as an inevitable and uncontrollable process. They perceived powerful forces, which they felt were combining to promote rapid expansion of screening techniques. They described the idea that technology has a momentum of its own. Midwives were concerned that the culture of screening has become a force, which promotes prenatal screening. Williams et al. (2002a) reported that the midwives view was that pregnancy is being seen increasingly as an 'at risk' time with every pregnant woman being offered a growing number of screening options and that many midwives felt that the women's choices to opt in or out of screening might be shaped by the very act of screening being offered and that many felt that it was harder to opt out of screening than to opt in. This view reflects the statement earlier that the medical model has overtaken the social model adopted in maternity care. Within the review of the literature several themes about the midwives experiences have arisen, yet a search for the medical experience has revealed little or no knowledge by which to compare. How doctors feel about ultrasound use in pregnancy and their feelings on the issues of offering ultrasound

examinations to women have not been investigated. The only relevant literature available, during the searching, related to the clinical experiences in the form of case study write-ups and developments in ultrasound imaging supported by the medical profession. There is a gap in the knowledge surrounding doctors' experiences and thoughts on a clinical test that has such a profound emotional effect on the women for whom they care.

Another area of consideration that emerged from the reflection taken of the 'encounter' (p15), was the idea that professionals view ultrasound as a clinical examination whereas the literature search earlier showed that women view the role of ultrasound more as a social experience. The social model clashes with the medical model and this paradox may provide a barrier to the professionals whose responsibility it is to acquire confirmation that women have made an informed decision before they perform the scan.

2.3.2 Position of ultrasound practitioners (sonographers)

The difficulty faced by professionals undertaking the ultrasound examinations stems from the fact that although technological advances have allowed the development of equipment that can visualise detail, it is not always the case that a problem or abnormality can be identified. Along with this there can also be the situation where it is considered that there may be an abnormality or a problem, but on further testing the results demonstrate it to be a normal finding. The subjectivity and operator experience dependency can place women in a distressing situation (Saari-Kemppainen et al. 1990) and women do need to be made aware of false positive as well as false negative results being given from an ultrasound scan. In one early study involving women at high risk, almost 10% of scans were uncertain (Sparling et al. 1988). The position of the baby in the uterus has a great deal to do with how well the practitioner visualises organs such as the heart, face and spine and sometimes a repeat examination is required to review the

fetus in a different orientation. Images tend also to be clearer in slim women and frustratingly unclear in obese women, particularly if there is reduced amniotic fluid as in cases of fetal growth restriction. As in almost every endeavour, there is also a wide difference in the skill and training level of the ultrasound practitioner often causing variable scanning times needed to adequately complete the examination. Constructing an anatomical picture from restricted views is problematic, and errors are not necessarily negligent (Symon 2006).

The next step in the literature search was the exploration of the knowledge on the role of communicating aspects of information about the capabilities and limitations of ultrasound imaging in the established antenatal care pathways.

2.3.3 The task of offering fetal anomaly screening to women

The National Institute for Health and Clinical Excellence (NICE) issued guidelines on antenatal care, stating that all women should be offered an ultrasound scan to screen for structural abnormalities, ideally between 18 and 20 weeks plus 6 days gestation (NICE 2008). A document produced by the Royal College of Obstetrics and Gynaecology (RCOG 2000) states that 'the objectives of the ultrasound examination should be made as explicit as possible to women and their partners to enable them to opt for, or opt out of, having a scan. For example, women who do not wish to be informed of a risk of aneuploidy, a fetus with an unusual number of chromosomes, may consider not having a scan at all'. It goes on to say that 'clear, written advice should be given to women prior to their scan. The advice should indicate the nature and purpose of the scan (i.e. the structures examined) together with the detection rate for defined, common conditions'. However, Smith and Marteau (1995) in their study of 215 consultations reported that the purpose of the anomaly scan was discussed in only 37% of relevant consultations, the

scan was presented as optional in only 11% of cases, and only 1% of women were told what a normal scan result would mean. A Canadian study, undertaken by Kohut et al. (2002) reported, that of 117 women who completed a questionnaire to evaluate women's understanding of ultrasound in 'low-risk' women 55% stated that they had received no information regarding prenatal ultrasound testing and 46% did not view ultrasound as a screening test for anomalies. A number of studies focussing on screening have been conducted more recently since it forms a major aspect of modern maternity care. In a systematic review, Green et al. (2004) concluded that information levels remain inadequate for fully informed choice. In a recent study observing 14 pre-screening consultations with community midwives, as part of a newly introduced nuchal translucency screening program, Pilnick (2004) found that 'whilst there was clear evidence that midwives were at pains to explicitly invoke the issue of choice, there were other more subtle factors in the interactional presentation of screening tests that served to undermine this'. She found that with many areas being covered in this time-pressured visit and the presentation of screening tests, which are perceived as mundane (such as blood tests) prior to the Down's screening, the approach tended to frame responses in such a way that agreement seemed a matter of course.

The majority of midwives highlighted the lack of time available to explain the screening process fully to women and some of them recognized their own potentially strong influence on women's choices. There was a concern about the accuracy of the information given to prospective parents about the conditions being screened for and complex information presented at a sensitive time posed some professionals difficulties. Positive attitudes towards obstetric ultrasound are likely to reflect the fact that ultrasound is offered as a 'routine' part of antenatal care. There may be evidence that women have unrealistic expectations of the capabilities of ultrasound to detect abnormalities. Symon

(2006) highlighted this problem when describing four separate litigation claims for negligence that concerned apparent failures on the part of those performing ultrasound examinations to identify fetal abnormalities. Two of the four cases were unsuccessful with weaknesses of ultrasound as a diagnostic test summarized by a judge in one of the cases:

"Interpreting an ultrasound is an imperfect science involving a large amount of personal judgment"

(Symon 2006, p 736)

Symon (2006) concluded that it is important to educate pregnant women and their families about what is realistic and reasonable, and what may not be. He makes the point that it is important not to get carried away by ultrasound and professionals should impart this message during antenatal consultations so that a sense of perspective is maintained when assessing the potential and limitations of ultrasound in pregnancy. Some abnormalities are very difficult to find or to be absolutely certain about. It is important to remember that technology cannot be relied upon 100% of the time. Ten years ago only 30-50% of serious birth defects were detectable by second trimester ultrasound screening (Todros et al. 2001) and most congenital anomalies occur in newborns of healthy low-risk women with no known family history of genetic concern.
Information on the subjectivity in ultrasound and operator dependence should be made available to women before they consider opting for ultrasound screening, but it is unclear to ultrasound practitioners, when discussing ultrasound prior to performing the scans, whether these aspects of the examination has been clearly explained.

2.3.4 Styles of communication

McCourt (2006) identified three main styles of communication in midwifery booking visits:

Figure 3. Three styles of communication (McCourt 2006)

Interactional style	**Health educational model**
Professional: expert guidance	didactic, information transfer
Partnership: participative or collaborative	learner- or adult-centred
Disciplinary: expert surveillance	didactic and correctional

The most common, professional style was characterised by a ceremonial order in which, for the most part, the professional talks beginning with questions or a brisk introduction to the service, and the client listens but offers relevant information and asks appropriate questions. It typically employed a friendly formality, and impersonal terms such as the corporate 'we' are used. Its functioning appeared to rest partly on assumptions of shared behaviours, expectations and goals and limited, focused communication.

The partnership style was characterised by listening and turn taking in a conversational manner rather than a ceremonial order, interjection but not interruption (as discussed above) echoing and mirroring of language, posture and movement. It was more likely to employ a narrative style and order.

The disciplinary style was similar to that of the professional style, but with less attention given to client responses, more closed forms, and more use of conversational devices to

steer the discussion. The focus on giving correct health information appeared to reflect an assumption of the women as having faulty or inadequate health knowledge or beliefs and behaviours.

2.3.5 'Informed choice'

An informed decision is one where 'a reasoned choice is made by a reasonable individual using relevant information about the advantages and disadvantages of all the possible courses of action in accord with the individual's beliefs'. A report of the expert maternity group by the Department of Health in 1993 produced the document, *Changing Childbirth* that acted as a catalyst for promoting a partnership between health professionals and women when making decisions about individual clinical care. There has been further work undertaken by the UK NSC (2011) to improve information for supporting women in making an informed choice with regard to fetal anomaly screening, but it is unclear how much training doctors receive in delivering this support to women. The literature search on informed choice and decision making in pregnancy has provided knowledge that predominantly only focuses on the role performed by the midwives without information available that demonstrates any real contribution to the actions taken by the medical profession. Nicol (2007) evaluated the external pressures that influence the process of informed choice made by first- time expectant mothers. The paper described the impossibility for women to make informed choices about accepting ultrasound examinations due to the influences of hospital and social cultures, as written by Foucault (1991) in his consideration of 'governmentality'. The term government to Foucault meant not so much the political or administrative structures of the modern state, as the way in which the conduct of individuals or of groups may be directed. To analyse government is to analyse those mechanisms that try to shape, sculpt, mobilise and work

through the choices, desires, aspirations, needs, wants and lifestyles of individuals and groups (Dean 1999, p12). Nicol (2007) combined this with the woman's recently encultured need of "visual" proof of pregnancy and refers to Duden's (1993) writing, where historically, women based their pregnancy beliefs on signs and symptoms, and were dependent on their own observation, feelings and intuition (Duden 1993).

2.4 The development of obstetric ultrasound.

Medical ultrasound was developed from the method used to detect submarines during the Second World War, and at first required the pregnant woman to be immersed in a bath of water. The next 40 years saw remarkable developments of the technique, which led to the development of the specialty of fetal medicine and went on to transform other medical specialties (Woo 2006). A 'technology push' situation further evolved when enhancement in diagnostic capabilities of scanners was propelled by advancements in electronic and microprocessor technology, occurring most significantly in the 1980s and 90s. The advent of Ultrasonography in obstetrics has also 'created' the new specialty called "prenatal diagnosis" that has developed exponentially since its early conception (Woo 2006). Ultrasound has markedly enhanced and pushed forward the study of congenital abnormalities among obstetricians, paediatricians, geneticists, pathologists and other allied specialties. Suddenly, obstetricians were starting to learn about so many congenital malformations that they had not even heard of and ultrasonography quickly became the single most important diagnostic investigation in the field of obstetrics and the healthcare for women. Professor Stuart Campbell is perhaps the most well known figure in the field of Obstetric and Gynaecological ultrasound to date. His research in ultrasonography, prenatal diagnosis, fetal medicine and therapy has spanned an incredible number of important areas and in his unfailing perseverance in breaking new

grounds. Image quality of real-time ultrasound scanners has made steady improvements during the mid 1980's to the early 90's alongside the increasing versatility and affordability in microprocessor technology (Woo 2006). The availability of new and effective technologies to ultrasound scanners has also progressively stemmed from advances in technology in other areas of science such as radar navigation and telecommunications. With this development, expansion in the field of ultrasound has occurred leading to dramatic increase in the demand for the medical technology by the medical profession within health care.

2.4.1 Demand for obstetrics and gynaecology ultrasound services in England and Wales

Obstetric ultrasound is the use of ultrasound imaging in pregnancy and since its introduction in the late 1950s it has been a key part of antenatal care in Canada, the United States, and Europe (Mitchell 2004). Dodson and Pache (1995) highlighted an increase in demand for ultrasound in both fields of obstetrics and gynaecology. They listed three reasons why demand for ultrasound had risen. Firstly, the advancement in the technical components of the equipment has allowed improvements in visualisation of the anatomy. Secondly, with this improved technology, equipment has become cheaper and more widely available. Thirdly, the improvement in technology has created an explosion of research with more ultrasound applications being developed. A 'technological push' situation has evolved when enhancement in diagnostic capabilities of scanners was propelled by the almost explosive advancements in electronic and microprocessor technology occurring most significantly in the 1980s and 90s.

Fig 4. Technology push model

One such improvement is seen in the clearer resolution when using high frequency transvaginal transducers, which now allows better imaging of smaller pelvic structure, and the diagnosis of many pathological pelvic conditions that were difficult or impossible to see only a few years ago. They describe the profound impact of the introduction of high frequency transvaginal ultrasound (TVS) has had on gynaecology and early pregnancy referral rates. One important area where transvaginal scanning has improved obstetric care is in the area of early pregnancy assessment when women are accessing care for symptoms of bleeding and pelvic pain. Bigrigg and Read (1991) describe the situation for assessing women before dedicated early pregnancy assessment units (EPAU) were set up. Their account has explained how, historically in their setting, women with symptoms relating to early pregnancy problems were admitted to hospital immediately causing great upheaval to them and their families. After admission, those women who did not require emergency treatment had to wait until the appropriate investigations could be arranged to confirm the diagnosis. Most of these women had continuing pregnancies confirmed and were subsequently allowed home, but those who required either an evacuation of retained products of conception or laparoscopy often had to wait again until a space was found on the 'urgent' operating list. For nearly 20 years and particularly in the UK the establishment of early pregnancy assessment centre (EPAC) services has improved quality of care, decreased admissions and had a positive impact on staff and financial factors (O'Rourke and Wood 2009).

2.4.2 The use of ultrasound as a screening tool.

There are large differences in the reported performances of routine screening programmes, which have caused a debate over their usefulness. The reported sensitivity varies from 13% to 82%, with an average sensitivity of 27%. (Levi 2002) Facing the extreme variety in sensitivity figures, it is understandable why the reliability and utility of ultrasound screening for fetal malformations is a controversial subject, which leads to many disagreements. Nevertheless, in most countries nowadays it is generally accepted that ultrasound screening is a useful procedure to permit the diagnosis of structural abnormalities or signs of aneuploidy and to allow termination of pregnancy at the parent's request. An early diagnosis occasionally permits intrauterine therapy or in on-going pregnancies, the organization of optimal care or surgery for the newborn. The major disadvantages of screening are false-positive and false-negative findings. In pregnancy, a false- positive finding causes emotional damage because the duration of pregnancy has to be awaited before proving the diagnosis incorrect or, even more seriously, can lead to a termination of pregnancy for false reasons. This latter situation is, fortunately, seldom encountered.

- **Gap in the existing literature**

The literature review has demonstrated that ultrasound is a routinely used imaging modality employed by doctors in obstetric care and the antenatal care pathways followed by the doctors interviewed in the study (figures 1 and 2, p25 and p33 respectively), show that doctors have contact with women prior to them attending for their ultrasound scans, but there is a lack of literature regarding their role in information sharing with women over the uses and limitations of obstetric ultrasound. There is therefore a need to explore whether doctors are actively engaged in information sharing. By understanding 'what

they say' and 'how they say it', this may help to inform future discussions over how to better support women in decision making when considering opting for obstetric ultrasound scans.

Conclusion

This chapter has considered the existing literature that substantiates the research question. The review has revealed that women see ultrasound scanning as a valued part of the antenatal experience, and that they value ultrasound examinations highly as a social experience compared with the idea that it may provide clinical information for diagnosing fetal abnormality. This review of the literature has revealed a gap in the knowledge about the doctors' experiences of offering ultrasound scans within the routine antenatal care pathways. Knowledge from the medical profession that is available presently in the literature, has focussed on the diagnostic aspects of ultrasound scanning, with no breadth of knowledge describing their experiences of conversing with women about ultrasound use and as such there is a gap in understanding what part the medical profession plays in supporting women when they require to make an informed decision. This review, has revealed a need to explore the doctors' perspective on the use of obstetric ultrasound in order to consider if they are actively engaged in the process of unbiased information sharing with prospective parents or, whether they act true to hegemonic gender belief theory (Nichol 2007) and by their professional position, subconsciously bias women's decision making.

The next chapter considers the method undertaken to generate the data about the doctors perspective on ultrasound imaging in obstetric practice.

Summary of Chapter Two-Literature review

Over the last 40 years the remarkable developments of ultrasound has led to the creation of the specialty of fetal medicine. A 'technology push' situation evolved when enhancement in diagnostic capabilities of ultrasound scanners was propelled by advancements in electronic and microprocessor technology and has 'created' the new specialty called 'prenatal diagnosis' that has developed exponentially since its early conception. There are large differences in the reported performances of routine screening programmes, which have caused a debate over their usefulness. Facing the variety in sensitivity figures, it is understandable why the reliability and utility of ultrasound screening for fetal malformations is a controversial subject, which leads to many disagreements. Nevertheless, in most countries nowadays it is generally accepted that ultrasound screening is a useful procedure, to permit the diagnosis of structural abnormalities. There may be evidence that women have unrealistic expectations of the capabilities of ultrasound to detect abnormalities and that it is important to support pregnant women and their families in understanding about what is realistic and reasonable, and what may not be. Doctors, midwives and ultrasound practitioners (sonographers) all play a part in providing obstetric ultrasound services and appreciate the need for providing coherent information about the benefits and more importantly, the limitations of ultrasound imaging. Studies have looked at the midwives and women's perspective on the use of ultrasound but there is little information regarding doctors' views and experiences of offering obstetric ultrasound imaging to prospective parents. There is therefore a need to understand the medical perspective in order to establish whether doctors are active agents in unbiased information sharing with women and their partners, or whether, in practice, their actions fit with the hegemonic gender belief theory instilled by their professional role.

Chapter Three: Methodology

Introduction

This chapter leads from the critical appraisal of the literature based around the different perspectives of ultrasound use in obstetrics, to look at how the research question was addressed and answers found. Section One is an account of the decision to choose a qualitative approach and apply a 'Framework' method as a research strategy. Section Two describes the creation and implementation of the analytical framework and the approach taken for generating the data. Section Three describes the process of generating and analysing the study data. Section Four considers the issues of rigour, researcher involvement and Section Five addresses the ethical issues relating to undertaking the study.

3.1 Choice of research method

3.1.1 How to best answer the research question

There are many factors that may influence women's decision to choose an ultrasound test during pregnancy, some of which may arise from conversations they have with the medical and midwifery professionals whose roles are to support them in their antenatal care. A starting point for exploring these factors may be through group discussion. However, before all parties can be brought together, it is important to understand both the medical and midwifery professional views surrounding ultrasound use and, although there is literature discussing the midwifery perspective (Ekelin and Crang-Svalenius

2004; Oliver et al. 1996; Smith et al. 1994; Williams et al. 2002a) there is limited documentation relating to the medical perspective. This gap in the literature demonstrates the need to first explore the medical view in order to provide a broader picture regarding the overall 'professional' perspective. This study therefore, focuses on building a theory that explores the doctors' experiences of discussing obstetric ultrasound with women and contributes to a fuller understanding of the overall professional perspective on ultrasound use in maternity services. It informs any future discussion that aims to improve the service delivery of ultrasound scanning and fetal anomaly screening in a district general hospital.

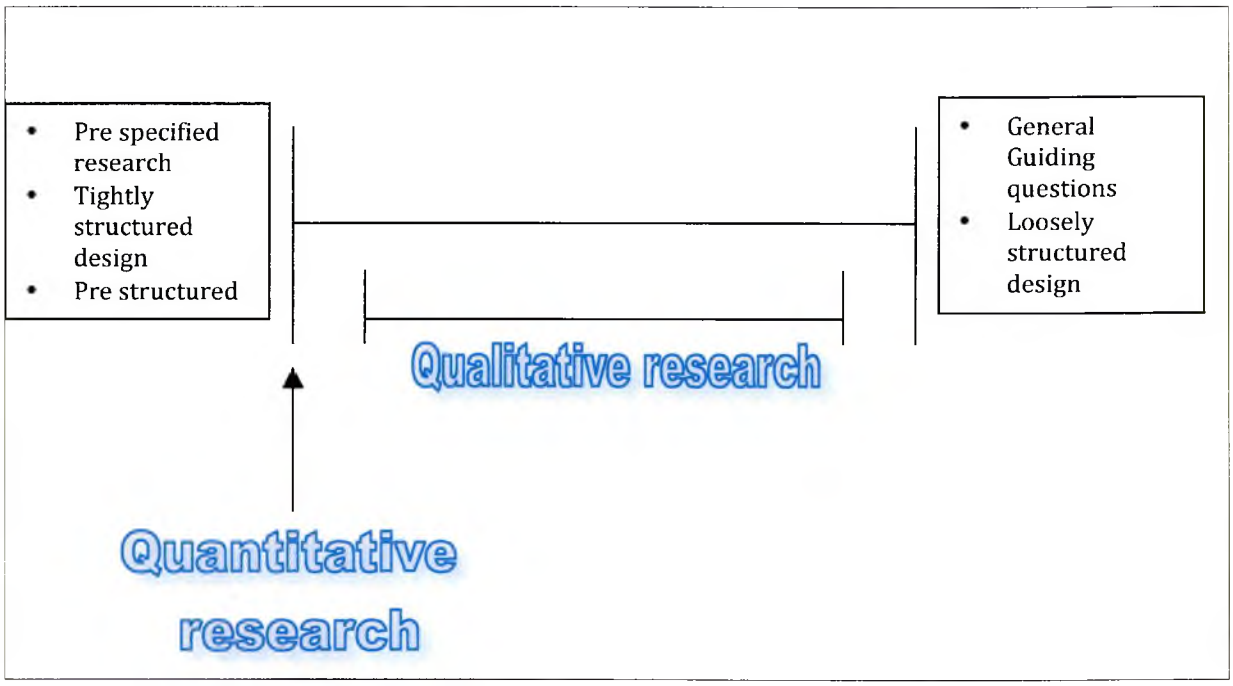
This study effectively utilises resources as the author takes the role of both researcher and interviewer. The findings provide new knowledge to aid support in further research aimed at improving the support given to women accessing care in this service provision.

3.1.2 Structuring of the method

Henry (1986) highlights factors that are important to consider when choosing the method to answer the research question: What is required to be known, what the expected outcomes of the research will be, constraints of the setting and to a lesser extent on the resource available. In the previous chapter, statistical evidence in a quantitative form by Boyd et al. (2009) provides evidence to suggest that doctors endorse ultrasound use in obstetrics and by the sheer numbers of ultrasound referrals highlighted, may infer reliance upon the examinations. However, due to the quantitative nature of the audit, it is not possible to determine how confident doctors feel about ultrasound use, nor is it able to explain the level of expectation doctors place on the ultrasound tests. It is this data that has provided a springboard from which to explore an understanding of the views of the medical professionals and has determined the choice of research method.

Punch (2005) describes a continuum for thinking about research questions and methods with the dimension of interest being the amount of pre-specified structure in the research method that is used.

Figure 5. Continuum for thinking about research questions (Punch 2005: p22)



On the one hand research can be pre-specified (all pre-planned or predetermined) or research can be unfolding (emerging or open-ended). Pre-specified means how much work is introduced ahead of the study compared to unfolding where most work occurs during the study. Miles and Huberman (1994) discuss this idea under the headings of 'tight versus loose' when they consider research strategy. Along this continuum (Punch 2005) quantitative methods usually lie to the left (pre-specified) and qualitative methods tend to take up a large stretch towards the right side (unfolding). In this study a priori search in the literature, outlined in the previous chapter, and the researcher's insight, based on extensive professional experience in ultrasound practice, reveals how complex the subject of women's decision making is. As the literature implies, ultrasound use

evokes strong personal feelings and views for women (Garcia et al. 2002; Whynes 2002) and for these reasons it is clear that a quantitative research approach, with its tightly structured design and pre structured data, would be restrictive and would fail to respond to the complex nature of the situation.

By taking a qualitative approach this can both inform and complement the work by Boyd et al. (2009) and has the strength and potential to inform doctors and other professionals providing obstetric services. An example of a piece of qualitative research that transformed clinical practice is seen in Oakley's (1980) pioneering study analysing first time mothers' experiences of childbirth. Over twenty years later the description of antenatal care and obstetric practice and the wider meaning of motherhood are still relevant.

It is clear that a qualitative method is appropriate as it is a naturalistic and interpretative, concerned with understanding the meanings that people attach to phenomena within their social worlds. This approach is useful as its aim is to gain better understanding of the complexities of human experience and quite unlike 'the reconstructed logic of science' (Kaplan 1964), research like this study can be messy but because of the nature of this research problem and the fact that there is little documented about the doctor's experience, then this approach is best suited because it reveals the intricate details about phenomena such as feelings, thought processes and emotions that are difficult to extract or learn about through conventional quantitative methods (Strauss and Corbin 1998). In the imaging profession it is more common to conduct research of a quantitative nature but as there is a need for professionals to shift the focus of research to become more patient-focussed then, as Reeves (2008) suggests, qualitative methods are a

powerful tool in professions like imaging, with which to explore the patient's perspective and to analyse the social phenomena of the profession itself.

Shulman (1988) emphasises the point 'we are advised to focus first on the problem and its characteristics before we rush to select the appropriate method' The research question was formulated based on the researcher's experience and the need to make data-driven decisions in a work environment, the need to understand the 'how' but also the importance of allowing a richness of information to emerge are both criteria set out by Creswell (1998) for choosing a qualitative method. In the last forty years more humanistic paradigms, concerned more with discovery than with verification, with description rather than prediction, have emerged.

3.1.3 Choosing a research strategy

There are many research strategies which can be used to answer this question, with examples such as Moustakas (1994) who discussed the physiological tenets and the procedures of phenomenology, Strauss and Corbin (1998) who defined the procedures of grounded theory, Stake (1995) who identified the process of case study research and Ritchie and Spencer (1994) who devised the 'applied framework' method.

Theory generation research would be a good start in searching for a strategy to build a theory that portrays medical understanding of obstetric ultrasound use. It was given new legitimacy in social science by the development of Grounded theory. Grounded theory is an explicit regeneration research strategy developed in reaction against the over emphasis on theory verification research in the American sociology of the time. Gudex et al. (2006) adopted this method for data generation and analysis, in their investigation into women's reasons for requesting prenatal ultrasound. This inductive process in which the

interviews and focus groups provided a textual database from which key themes and their inter-relationships were identified, has informed this design.

The 'Framework' approach falls into the category of generated methods that involve 'reconstruction' and require reprocessing and retelling of attitudes, beliefs, behaviour or other phenomena. The generated data from this study gave an insight into the doctors' own perspectives on an interpretation of their beliefs and behaviours and, most importantly, an understanding of the meaning that they have attached to them.

3.2 'Applied Framework' strategy

Approaches to qualitative analysis vary according to the way they address a number of different issues. This study treated the data as referring to and representing phenomena (in terms of feelings, perceptions, experiences or events) which existed apart from the data and the setting (interview) in which the data were generated.

The tool selected to facilitate the analysis process was the use of an 'analytic framework' (appendix 10a, p 262) in order to provide a structure (framework) that allowed emergent ideas and concepts to be captured and revisited through the creation of an initial five topics of discussion (appendix11, p 277) organised into five charts, providing quick and easy access to the original data. How the final three themes emerged from the data, is described below along with a description of the framework method of analysis.

3.2.1 'Applied Framework' analysis

Researchers working at the UK National Centre for Social Research developed this 'framework' method. It takes the approach of developing a hierarchical 'thematic framework' that is used to classify and organise data according to key things, concepts and emerging categories (Ritchie et al. 2003). The timescales of applied research tend to

be short and there is often a need to link the analysis with quantitative findings. For these reasons, although the Framework approach reflects the original accounts and observations of the people studied (that is, "grounded" and inductive), it starts deductively from pre-set aims and objectives (Pope et al. 2000).

Pope et al. (2000) lists the five stages of data analysis in the Framework approach. The first stage is '*familiarisation*'; immersion in the raw data, summary of this process is included in appendix 10b (p 274) and is followed by the development of a *thematic framework* to incorporate the key issues that have emerged from the '*familiarisation*' stage. The data is then '*indexed*' by applying the framework systematically to transcripts (appendix 10a, p 262) followed by '*charting*', requiring rearrangement of the data into appropriate areas of the framework with the creation of tables of data incorporating similar concepts or ideas (appendix 11, p 277). The final stage of analysis involves '*mapping and interpretation*' in order to find associations between the emergent concepts and themes. Examples of this process are seen in appendix 18 (p 355) and the colour coding of the summarised topics in appendix 17 (p 351). This process is influenced by the original research objectives as well as the themes that have emerged from the data generated. All transcripts and charts have been included in the appendices to allow the analysis to be viewed and assessed by people other than the primary analyst.

There are four major methods for generating data to be used in the applied framework method: observation; analysing text and documents, interviews, recording and transcribing and in this study the method of interviewing was chosen.

3.2.2 Technique of data generation

Data was generated through individual interviews. A key feature of this method is the ability to provide an undiluted focus on the individual. A data generation method such as

interviewing, involves close contact between the researcher and the interviewees, allowing emergent issues to be explored and detailed data to be generated. Analysis of qualitative data is open to emergent concepts and ideas, producing rich description. Kvale (1996) offers two positions on in-depth interviewing, of which the first he summarises as the 'miner metaphor' which sees knowledge as 'given':

> *Knowledge is understood as buried metal and the interviewer is a miner who unearths the valuable metal...The knowledge is waiting in the subject's interior to be uncovered, uncontaminated by the miner. The interviewer digs nuggets of data or meanings out of the subject's pure experiences, unpolluted by any leading questions.* (Kvale 1996 p.3)

Qualitative interviews can take different formats, with individual in-depth interviews being useful for understanding complex social issues that are relevant to health care settings (DiCicco-Bloom and Crabtree 2006). Unstructured, in-depth interviews have been employed in this study because they are uniquely sensitive and provide a powerful method for capturing the doctors' experiences, allowing them to convey to others their situation from their own perspective and in their own words. Descriptions of specific situations and actions relating to ultrasound use have been drawn out whilst the interviews were focussed on a particular theme and not restricted by standard questions. The interviewer remained open to new and unexpected phenomena, adopting a 'curious' approach to gaining more understanding about the themes that emerged.

3.3 Generating the data

3.3.1 Study setting

The setting for the study was the antenatal department within a district hospital Trust registering over 3,000 live births, providing NHS care in England. The setting is appropriate for providing information to answer the research question as almost all pregnant women accessing the service locally will have some contact with a doctor from the antenatal unit and attend the ultrasound department that is experiencing the research problem. Through these contacts and consultations made between the doctors and the prospective parents, the theory of the medical perspective of the use of obstetric ultrasound has been generated.

3.3.2 Participants

The decision taken over how much time doctors take to become familiar with the new department was decided after discussion during the initial briefing session. It was considered a difficult decision to make as each individual doctor may require differing lengths of time to become accustomed to the nature of the work and this may also be dependent on their previous levels of experience, so in order to limit this problem, the doctors were asked to participate after they had undertaken their induction period and had worked at least one month in their new posts. It was also important to include in the interview sample, doctors of senior grades who are in relatively fixed posts and would therefore be already familiar to their role within the unit as well as the researcher's own professional role. Both these points may be seen as limitations to the study and it was important to consider these aspects during the analysis of each of the doctors' transcripts.

Participation in this study was voluntary. Contact was made through one of the weekly medical lunch meetings organised by the workplace supervisor, with a short explanation, inviting doctors to participate through a telephone or verbal request. Once they made contact, they were provided with the information sheet and a consent form that included the relevant contact details in order to set up a date and time for the interview; they also received information about how they could, at any time, discuss any concerns regarding participation or information on how to withdraw from the study.

3.3.3 Sample size and selection criteria

Due to the limits placed on the study data generated needed to occur over a relatively short space of time in order to complete the doctoral project. In view of the size of the antenatal department (over 3,000 births per year), under the care of five consultants and junior staff (approx. 20 doctors), it was considered that up to ten doctors would be a suitable number to include in the study, however, during the eighth interview it became clear that saturation of the data had occurred. Baker and Edwards (2012) sought the responses of eminent researchers about 'how many interviews should be performed in a qualitative study?' The responses generally had the emphasis on searching for commonality, meaning that once a qualitative researcher is conducting their research they may find that that the evidence is so repetitive that there is no need to continue. Thus, for Ragin, Wolcott and many of the other experts, saturation is central to qualitative sampling (Baker and Edwards 2012). As Bryman (1988) writes, researching until saturation is achieved is a challenging approach because 'it forces the researcher to combine sampling, data collection, and data analysis, rather than treating them as separate stages in a linear process'. It also means that it is impossible to specify the number of qualitative interviews necessary to complete a project at its inception (Baker

and Edwards 2012). After completion of the analysis a further single interview was undertaken at the end of the analysis process, to validate the emerging results of the data (member checking). Recruitment and interviewing of the doctors took place over 9 months, in 2009-2010, with all doctors working in the antenatal unit having an opportunity to volunteer.

Initially the sampling strategy identified doctors who wished to participate. Later the selection was decided by the need to interview a range of different grades of doctors working in the antenatal department in order to allow for the inclusion of doctors with a range of medical experience. However, this is misleading, when attempting to give their title grade as some doctors were interviewed as they had just begun in a new post and therefore were perhaps speaking more about their experiences from their recent but previous grade. By chance, there was an even number of male to female doctors participating and as seen in the table in appendix 12, (p 323) there was representation from doctors who had worked both in the UK and abroad. The participants were made up of the professional grades of senior house officers (SHO), registrars, senior registrars (staff grade) and consultants.

Reading some of the early transcripts, it became apparent that doctors sometimes combined their personal and professional experiences and so it was also important to incorporate the perspectives of both doctors who were parents and had experienced obstetric care personally within the data set. It also became clear during the data generation period that some doctors had practiced or had personal experience of obstetric care in other countries that gave a comparable perspective to some of the emerging concepts.

The decision taken to interview between eight and ten doctors to formulate the data was confirmed by the researcher acknowledging the need to incorporate a range of factors such as: gender, professional grades and level of experience, geographical experience including overseas practice, special skills such as further ultrasound training and the doctor's personal circumstances involving previous personal obstetric experience. After completion of eighth interview, saturation of data generated was demonstrated by the fact that during the eighth interview, no new data emerged.

3.3.4 Interviews

Audio recording was essential in order to reduce the need for extensive note taking during the interview. It provides a complete and accurate record of what was said with the language used, as well as a clear idea of how the conversation took place, including any pauses, gestures or questions that may have held clues to interpretation of the interviewees' experiences. An essential preparatory step advised by Roulston (2010) was to have the right kind of equipment as well as allowing sufficient preparation time prior to the interview to check the equipment and recording devices.

Both digital and taped audio recordings were made of each interview. The length of time spent in each interview was guided by the interviewees themselves and no pressure was put upon any interviewee to close the session before they had said all they had wanted to include. Asking evoked perceptions of ultrasound use in obstetrics:

> *'I would like you to describe, your experience of offering ultrasound scanning to pregnant women'*

The doctors were allowed to steer the conversation.

Due to the interviewer/researcher's physical writing constraint, it was acknowledged, early in the planning of the study that there may be specific difficulties relating to the documenting of memos or information during each interview. To reduce this limitation, immediate recounts of the researcher's thoughts regarding the interview process were recorded in the researcher's journal, and added later to the transcripts (appendix 13, p 324)

Transcribing the interviews

Transcribing interviews is a time consuming event and there is a need to ask a number of questions to guide decision-making concerning transcription practice. In this study, the intention was to use an inductive method of analysis to generate themes and guidance which was taken from Roberts-Powers (2005) who made suggestions for dealing with incomplete and faltering speech, 'fillers' (such as 'like' and 'you know') and continuers (such as 'mm-hmm). Another consideration made was which parts of the transcription should be used within the write up. The decision was taken to group quotations and parts of the text from the charts created pertaining to the themes under discussion in order to provide a degree of participant anonymity.

Having the transcriptions in written form enabled the amalgamation of the memos and notes made about the interviewees' responses included in the margins of the paper copy and therefore enabled different codes to be incorporated within each paragraph. Electronic copies have allowed transference of chunks of data from each interview into thematic charts developed during the process of analysing the data as suggested by Ritchie and Spencer (1994) with the incorporation of page referencing to provide a window into the data set. There was also a level of retention of the language used by the

respondents to provide both *illuminating and explanatory power* (Ritchie et al. 1994) for the later task of analysis.

Memo Writing

The use of memo writing is widely used by qualitative researchers and is a crucial step in this study in the generation of a theory. It involves the researcher writing and reflecting on the research process, analytical decision making and documenting the development of interpretations throughout the study. Strauss and Corbin (1998) highlight the use of extensive memo writing and how memos and diagrams evolve and form a theory, in particular they suggest that the use of memos helps the researcher gain *analytical distance*, by forcing the researcher to move away from the data to conceptualising. The memos were added to the transcripts and are seen in bold type (appendix 13, p 324).

3.3.5 Verification technique

Verification of the findings from the data analysis were made through comparing responses from a final semi-structured interview undertaken with a senior doctor using a set of questions relating to the themes that emerged from the analysis. A discussion surrounding the responses is included within the write up of the findings.

The key aim of this study was to produce a credible, trustworthy account that resonates with participants and readers. It was important to respond to this by making the method more explicit and this has been achieved by applying the 'analytic framework' method and making available to view the 'framework' and the charts created, in the appendix.

3.4 Data analysis

Key issues were identified from the first two interviews with a registrar and a doctor new into the post of registrar (appendix 10b, p 274) .The issues and points raised formulated

the initial thematic framework (appendix 10a, p 262) to which the remaining six interview transcripts were compared (indexed). When constructing the framework, the researcher also drew upon priori issues from the initial literature review as well as the emerging points raised by the doctors themselves, and the concepts arising from the recurrence of patterning of their particular views or experiences were clustered into five initial topics of discussion. A diagram depicting the five initial topics of discussion can be found on p 99.

3.4.1 Issues from the literature

Walsh and Downe (2006), consider that a well-conducted search of the literature is essential to formulating a good qualitative piece of research, but acknowledge the tension that exists regarding the limit to which researchers should seek out the level of knowledge/understanding about the issue being addressed before they embark on the data generation. There are differing views as to when the literature should be reviewed and as this study falls to the right-hand side of Punch's continuum (fig.5, p 68), with a general question rather than a specific list of questions set up in advance, then it is expected that the search in the literature would occur after the data is generated and during its analysis. However, Glaser and Strauss (1967) argue that by studying the literature prior to data generation this gives preconceptions about what to find and can cause the researcher to be desensitized by borrowed concepts. They believe that the literature should be sought during the data analysis when the codes are being combined. Contrary to this, Walsh and Downe (2006) explain because, as in this study, researchers often explore issues that they have knowledge of or are actively engaged in, then such detachment is unrealistic. As both these points are valid within this study a literature review was undertaken initially to provide the researcher with a broader understanding of the knowledge in order to help shape the research question. A further review of the

literature has been undertaken during the discussion write up reviewing the aspects of the themes that have emerged from the data analysis.

- **'Familiarisation' process**

From the first and second interview, individual points that were raised (indices) were identified which related to the issue of "what is the doctors perception of obstetric ultrasound". These were used as headings and formulated the backbone of the 'thematic framework' (appendix 10a, p 262). The remaining six transcripts were carefully scrutinised line by line, by the researcher making judgements about meaning, about the relevance and importance of issues raised and about implicit connections between the ideas as well as addressing the original research question. Headings were used to organise and analyse the data and the 'framework' of the points raised from the first two transcripts were manually cross checked across the whole data set and was used as a means of searching for and retrieving chunks of labelled data.

In comparison with manual analysis of the data, the main benefits of computer assisted qualitative analysis, described by Weitzman (2000) are seen to be speed offered for handling large amounts of textual data; consistency of approach; the facilitation of team research; the ability of the software to assist with conceptualisation of data and theory building and the relative ease of navigation and linking of data. Applying a computer software package may have provided some benefit to this study, in particular it may have shortened the time needed to analyse the data however, Coffey and Atkinsons (1996) make a valid point that some computer packages encourage tagging and retrieval of segments removing items from their context. They feel that there is a misguided view that coding and computing give scientific gloss to the analytic process and favour teasing out meaning within its context, or looking for the overall structure in the data. It was with

this view in mind and with the fact that it was agreed the size of the data set was manageable for one researcher that the decision was taken to apply a manual form of data analysis.

Analysis was a continuous process but it required two clear stages: management of the data and making sense of the evidence.

3.4.2 Managing the data

- Familiarisation, indexing and charting of the data

The first two interview transcripts and knowledge obtained from the literature review was summarised in order to understand the key referring issues: communication, counselling, reassurance for doctors, reassurance for women, expectation, doctor's knowledge and women's knowledge. These headings were used to provide the initial structure for the thematic framework. These can be seen in the first column, (appendix 10, p. 246). From the first and second interview, individual points that were raised (indices) were then identified and placed in the second column of the framework. These points related to the issue of what is the doctor's perception of obstetric ultrasound. The remaining six transcripts were then carefully scrutinised by the researcher and documented on the framework when any of the 56 points (indices) were raised and recorded in the appropriate column for that interview. The paragraph or phrase was numbered in the interview transcript in order to register easily on the framework where the data could be found. Each phrase of each interview was considered in detail by the researcher as to 'what it was about?' This was performed manually by the researcher and applied systematically across the whole data set. If any new point emerged from each of the transcripts as they were being applied to the framework then it was added to the original list so that no point raised was left out of the data set. Through evaluating the data

spread sheet, interconnections between some of the points raised emerged from the framework. This allowed clustering of the initial issues into five broader topics: doctors' experience of ultrasound scanning in early pregnancy, doctors' perspective on fetal anomaly screening (20 week scan), what doctors want from ultrasound examinations, doctors' thoughts on what women believe and expect from ultrasound and the doctors' own experiences of ultrasound in antenatal care. The data from each of these topics was gathered and considered individually, a detailed record of the results is provided in Chapter Four.

- Mapping and interpretation of the data

The data from each of the five initial topics were formulated into five charts (appendix 11, p 277) in order to establish the relationship of different concepts and meanings from the raw data. As the analysis began to unfold further charts were developed to reveal links with the different points and issues that had emerged. The results of the five initial topics, outlined in chapter four, were then analysed by the researcher by manual memo making denoting of concepts and their relationships that moved the analysis from description to theory. An example can be seen in appendix 14 (p 344) showing the dynamics between the concept of the doctors' knowledge and the value they place on ultrasound use. Initial thoughts and ideas contained impressions and directions of where to next look, in the data, for possible links between the different points the doctors made in their transcripts. Some points described, were placed in more than one chart and more than one place in the same chart, which highlighted connections between the emergent thoughts. Within these five topics it became clear that their were three themes that make up the doctors perspective on obstetric ultrasound: **the knowledge they have on obstetric ultrasound use, their views on the practice of ultrasound use in pregnancy and their ideas on the concept of ultrasound in obstetrics.** In chapter five, these three themes are

considered in relation to the research question " are doctors active agents of unbiased information sharing with prospective parents about obstetric ultrasound imaging?

3.5 Rigour and trustworthiness

There are a number of ways suggested to verify qualitative data and they broadly fit into two main sets, the first concerned with internal validation and the second concerned with verifying findings externally.

- **Internal Validation**

It was important throughout the process of generating the five tables to systematically check through the text to gather all the data pertaining to individual concepts to make sure to pick up all the references to each given topic, with the aim of leaving nothing out therefore, increasing the objectivity of the study and reducing the risk of only selecting bits of information that conformed to the researcher's preconceptions.

Throughout the analysis of the data there was constant checking for *accuracy of fit* (Glaser and Strauss 1967) and comparison across each of the interview transcripts. By applying the 'framework' generated to each interview it also allowed each interview transcript to be given the same analytic treatment i.e. the analysis was systematically applied across the whole data set. There was some flexibility in that, if a new concept emerged from an interview that had not arisen from the first two interviews used to create the 'framework', and then it was incorporated into the 'framework' allowing the number of concepts to increase as the analytical process continued.

- **External validation**

Creswell (1998) recommends that researchers engage in at least two of the following verification procedures:

Prolonged engagement and persistent observation

Triangulation

Peer review or debriefing

Negative case analysis (refining working hypotheses in the light of negative or disconfirming evidence)

Clarifying research bias

Member checks soliciting the informant's views of the credibility of the findings and interpretations

Rich, thick description

External audit

During the analysis of the data transparency to others was encouraged through the use of a variety of these techniques that included: immediate member checking, the application of debriefing sessions, research bias (reflexivity) and the production of an audit trail.

Member Checking

Just as the generation of information relevant to a research topic is an important criterion by which to judge the quality of the study, many researchers frequently use strategies to demonstrate quality related to the study as a whole, and take in decisions made during the design process, how interviewers report on the conduct of the study and how they go about analysing, interpreting and representing their findings in publications. There are many terms used in the field of qualitative inquiry, to define the sense of excellence, these include: validity, rigour, trustworthiness, credibility, transferability and plausibility. One commonly used method that was applied at two points in this current study was

Member Checking a term used by Roulston (2010), where participants, at different times in their interviews, were asked to assess the researcher's understanding of their points raised and secondly, after the data analysis was completed, a doctor from the unit participated in a semi-structured interview in order to engage in discussion around the themes that had emerged from the analysis. The transcript from this interview is included in appendix 19 (p 358). The aim of using this later interview was to provide a means of investigating the 'convergence' of both the data and the conclusions derived from them, a method advocated by Denzin (1994) for evaluating the credibility of the qualitative research. The conclusions drawn from using this transcript can be found in Chapter Seven that summarises the undertaking of this study, p194.

Debriefings

Debriefings with a workplace supervisor occurred through a variety of formats. There was an initial short discussion in response for help in seeking support in requesting volunteers for the interviews, followed by electronic mailing responses as communication for factual information during the analysis and write up of the findings. Clarification on several issues relating to concepts that arose from the analysis were discussed either verbally or via electronic mailing in order to reveal any influence that the researcher's own values and theoretical orientations may have had on the collection and interpretation of the data. These issues are included within the context of the write up of the discussion.

The use of the debriefings provided opportunities to explore or test any theories and interpretations with a colleague, a medical professional with ultrasound training as a speciality. Any dilemmas that arose during the data generation and analysis were recorded in the researcher's journal and, on occasion, discussed through the debriefings

with the work place supervisor. Any important issues were then considered within the discussion and included in the write up of the results.

3.5.1 Researcher involvement

One of the three concepts of reflexivity, developed by Wilkinson (1988) is termed *personal* reflexivity, relating to acknowledging who you are, your individuality as a researcher and how your personal interests and values influence the process from initial idea to outcome. In this study, the role of the researcher/interviewer played an integral part in the interpretation offered with their conceptual skills needed to sort, order and interpret the data. A reflective journal was created during the interviews and analysis, incorporating the memos, seen in bold on the transcripts (appendix 13, p 324) that provide some understanding of the researcher's interpretation of the results. The idea behind and the application of the journal within the researcher's reflexivity have been discussed further in the final chapter of this work.

Due to the technical nature of this study, it was important that the interviewer had a level of sensitivity to, and a fore knowledge about ultrasound use in pregnancy. Due to their professional background this was not difficult to fulfil, however, it was important that they did not impose pre formulated questions during the interviews and that they remained critical of their own presuppositions and hypotheses during each interview. Any initial bias of the researcher was addressed by the questions designed so as not to lead the interviewee; as proposed by Legard et al. (2003), open ended questions were asked in a particular sequence, from general *ground mapping questions* to more specific *content mining questions* used to explore what the interviewee has raised.

Within each interview the researcher and interviewee acted in relationship to each other and reciprocally influenced each other and the knowledge produced was constructed by the interaction itself, in the specific situation created by each doctor and interviewer meeting. In the discussion later, the researcher's reflexivity interweaves the writing as detachment of the researcher's stance is unrealistic and the role of the researcher in constructing the written account of the study is made evident. Transcription of the interviews was performed by the researcher, as Tilley (2003) comments that the transcribers interpretive/analytical/theoretical lens shapes the final texts constructed and as a result has the potential to influence the researcher's analysis of the data.

3.5.2 Audit Trail

In this study there was also an important issue to address in relation to the visibility of the method chosen. This study is made transparent by the detailed documentation of the method below and a review of the transcription, coding and analysis process available in the appendix, as there is a need not only to display the research process but also show the conceptual processes by which meanings or interpretations have been attributed. Such t*ransparency* or *thick description* as Lincoln and Guba (1985) advocate allows the reader to verify for themselves that conclusions reached by the researcher hold 'validity' and allows others to consider their 'transferability' to other settings. If decisions are to be based on the findings of this study, then policy makers and practitioners need to know how the findings of the research have been obtained.

3.5.3 Finding a way through the method

Within this study the pathways for forming ideas began right at the beginning of the analysis. It was an inherent and on going part of the research. The analysis began by

extracting ideas from the text of the first two interviews (appendix 10b, p 274) to formulate the 'framework' to which all of the six proceeding interviews' data was added, making the 'framework' the unit of analysis (appendix 10a, p 262). Concepts generated from the data were chosen by the researcher and included common sense terms, terms influenced by the literature and concepts devised by the researcher that were developed from loosely defined labels obtained from the doctors own terms. During the 'familiarisation' stage, an overview of the richness, depth and diversity of the data became apparent which helped in beginning the process of abstraction and conceptualisation. Whilst reviewing the transcripts, notes to a range of responses to questions were made, jotting down recurrent themes and issues that emerged as important to the doctors themselves. Due to the fact that the data generation and analysis was performed by a single researcher, this also offered a systematic overview of the scope of the data; that aided finding themes or examples that did not appear in an orderly way and helped get a handle on the data for making comparisons or connections. Some researchers commend the breaking up and reconstituting of data in order to further analytical understanding, an approach advocated by Strauss (1987) however, in this study it was felt important not to fragment sentences as it became clear to the researcher, during the analysis, that in some cases, when English was the interviewee's second language, they appeared to talk about their experiences using a range of words that helped them to define their feelings and by fragmenting sentences this may have misled the analysis.

In the case of applying computer software, too many code and retrieval packages fragment the data to a point that the overall narrative is lost and linkages between different aspects of an individual's experience are difficult to re create.

Richards and Richards (1994) emphasise the importance of retaining links to the original data and revisiting them constantly as an integral part of the analysis process. In view of this, all data was clustered into five initial topics with similar data incorporated into each topic chart (appendix 11, p 277) for comparisons and allow revisiting of each of the transcripts to validate the findings.

3.6 Ethical issues

3.6.1 Seeking approval

The obstetricians at the hospital positively received the study proposal, and approval was given by the hospital's research and development department and from the local ethics committee in July 2009. Permission was given by Sheffield Hallam University to commence the study. Ethical issues have to be considered in all research studies involving human subjects and Darlington and Scott (2002) consider the role of ethics committees as playing an important gate keeper role, in particular they have a duty to consider all possible sources of harm and satisfy themselves that the researcher has thought through all the relevant issues prior to granting permission to proceed.

The availability of a workplace supervisor was set up in order to provide support to both the researcher and the interviewees, acting as gatekeeper in the first instance and providing support during the data collection and analysis if any problem arose or any topic was broached that may have been considered as "upsetting" or as "unacceptable" practice. Guidance and support was also available, if required, through the counselling and advice services available within the hospital Trust.

There is the requirement that the data generated needs to be of the best quality and in this study this is achieved by application of a suitable method and correct procedures are

followed to receive permission to perform the study. The study considered the obligations to society and was conducted responsively and in a moral and legal order in accordance with the professional bodies under which the participants and researcher practices.

3.6.2 Ethical Issues pertinent to this study

There are three ethical issues that are particularly important in this study: anonymity, confidentiality and informed consent.

- **Anonymity**

Qualitative researchers routinely give participants assurances about anonymity and in order to achieve this, the participants' names were swapped for numbers and locations were allocated pseudonyms. The volunteers were advised, before agreeing to participate, that any information they disclosed would remain confidential, although their responses- exact words would be reproduced. To secure complete anonymity meant keeping the identity of the doctors volunteering unknown to anyone else other than the researcher and every effort was made to fulfil this by interviewing the participants away from the department, however, two participants requested lunch time interviews and complete anonymity was not achieved on these occasions as several minor interruptions occurred during one of these interviews when two members of staff called into the office during the setting up of the interview, however, the interview had not commenced at the time of the disruption.

As described by Reiss (1979), the single most likely source of harm within this type of study is the disclosure of private knowledge considered damaging by the participants. Christians (2003) describes the difficulties of fulfilling watertight confidentiality and as in this setting, the use of interview numbering and pseudonyms may not completely disguise the participants from insiders but minor changes have been made to the quoted

text during the write up to frame the data within the report in order to best conceal the source of data and participants were made aware of this limitation prior to their consenting.

- **Confidentiality**

The conditions for anonymity and confidentiality were given much thought and made clear to the participants. There was a need for acceptance of loyalties of the researcher and participants to: others, working environments, employers and senior staff and there was an understanding that these can form obstacles to honest disclosure and analysis. As with any confidentiality agreement there was a need to be clear about acceptable practice and understanding regarding the boundaries for disclosing unsafe practice. Permission was sought to record the interviews and any data pertaining to an individual participant remained anonymous (see participant consent form appendix 15, p 347). A digital audio recording was made of each interview with an audiotape available as a backup copy. Confidentiality was achieved by assigning each recording and transcript with a number and confidentiality maintained by storing the recordings and transcripts separate to any identifying documents. For archiving purposes data sets were anonymised before archiving and only the researcher had access, password protected, to the recordings and transcripts. All manual and electronic data including interview notes and memos, and audiotapes have been stored in a secure manner.

- **Informed consent**

The purpose of the study was made clear to the participating doctors through the development of an information sheet (appendix 16, p 348) which each doctor was given before they made their decision to volunteer, providing the information for them to understand what to reasonably expect of the study and the impact that it may have on

them. The information included the advice of their right to ask questions, their freedom to withdraw at any time and have their privacy respected. All participants, after signing the consent form, were invited to an "unstructured" interview. This fulfils the statements made through the Articles of the Nuremberg Tribunal and the Declaration of Helsinki that subjects must be told the duration, methods, possible risks, and the purpose or aim of the experiment (Soble 1978). Participants were made aware that they gave their consent freely, without deception and it was explained that they could leave the study at any time and that whatever they contributed to the data or by their early withdrawal, would not affect their future working relationship with staff within their workplace.

3.6.3 Value placed on the research

The final report will be in the context of a doctoral piece of work held at Sheffield Hallam University. Further dissemination is likely through relevant professional journals relating to the fields of antenatal care, health technologies and ultrasound diagnostics, with presentations likely to working parties from government bodies such as the UK NSC and NHS FASP. Participants will not be identified in any report or publication unless they have given prior consent.

Importantly, this knowledge will benefit all health professionals in their pursuit for more effective ways in supporting women making choices in pregnancy. It will provide knowledge that will support further developments in inter professional working between the imaging and maternity departments within this hospital.

These findings will not be directly comparable across other maternity units but it may be possible that some units with a similar service provision may see some benefit in understanding this work and further support their own improvements to practice, from these findings.

It has been important during the interviews to have an unstructured approach, as explained earlier, and for this reason, public involvement was not requested in the designing or management of the study, however, user groups may find the results from this study useful when they review their information and support 'tools' for women considering ultrasound tests in pregnancy. Service users and support groups, as well as government organisations, such as NHS FASP will play an important role in any future discussion that may be formed after the dissemination and publishing of this study findings.

Conclusion

This chapter has described the method chosen to generate the data and the reasoning behind the choice of the qualitative approach adopted, in order to explore the research question. An explanation was given to the way the data was generated and analysed. Rigour and trustworthiness have been addressed and finally, any identified ethical issues have been considered in light of the study design.

The following chapter details the results of the analysis of the data, obtained from the research interviews, as interpreted by the researcher during the analytical process.

Summary of Chapter Three –Methodology

Data was generated through unstructured, in-depth interviewing of doctors working in district general hospital antenatal clinic. This study used a qualitative methodology, incorporating a 'framework' (advocated by Ritchie and Spencer 1994) to analyse the data from the doctors' interview transcripts, that allowed emergent ideas and concepts to be captured and revisited through the final creation of five areas of discussion, that were presented into charts to provide quick and easy access to the original data. Key issues were identified from the first two interviews, which formulated the framework to which the remaining six interview transcripts were compared. The data was manually analysed by one researcher. An initial literature review was undertaken to provide a broader understanding of the knowledge in order to help shape the research question. A further review of the literature was undertaken during the writing up of the results, reviewing the aspects of the themes that emerged from the data analysis. Memos and a diary were written, involving the researcher writing and reflecting on the research process and analytical decision, documenting the development of interpretations throughout the study. During the analysis, transparency to others was encouraged through the use of techniques such as; immediate member checking, the application of debriefing sessions, research bias (reflexivity) and the production of an audit trail. Verification of the findings from the data analysis were made through comparing responses from a final semi structured interview undertaken with a senior doctor using a set of questions relating to the themes that emerged from the analysis. Research approval was received through the hospital within which the study was undertaken and from the local ethics committee, in July 2009. Permission was given by Sheffield Hallam University to commence the study. The three ethical issues that were particularly important in this study: anonymity, confidentiality and informed consent, were each addressed during the setting up of this study. Statistical evidence from a previous quantitative study by Boyd, et al. (2009) provided evidence to suggest that doctors endorse ultrasound use and this qualitative study can both inform and complement these findings. It has the strength and potential to inform doctors and other health professionals seeking improvements to working practice in antenatal services.

Chapter Four- Results

Introduction

The creation of the thematic 'framework' (appendix 10a, p 262) and five charts (appendix 11, p 277) depicting the initial topics of discussion, shows the inductive steps taken to arrive at the themes that made up the discussion surrounding the doctors' perspective on ultrasound use in this antenatal unit. Analysis of the charts revealed connections and interrelationships between different texts that are difficult to see in the original text based format. Several areas within the charts contained the same original text, demonstrating overlap and connections that engineered the thinking behind the clustering of the ideas as well as providing the data in an easy layout that encouraged the revisiting of the original text throughout the analysis process. Data analysis often takes place alongside data generation to allow questions to be refined and new avenues of inquiry to develop between consecutive interviews (Pope et al. 2000). By applying the 'analytical framework' method, it allowed for the stages that required inductive and interpretive thinking to be made more explicit, an important requirement as the study focused on a particular area of policy practice; effective communication with women when offering them ultrasound examinations in the antenatal care pathways. Similar ideas were initially combined into the five topics of discussion where, after further consideration of the data, three themes emerged. This chapter has revealed the doctors' perspective incorporating the raw data from the five topics of discussion created from the 'familiarisation' and 'charting' stages of the framework analysis method (Ritchie and Spencer 1994). Throughout the results it can be seen (following the coloured text) how the three final themes of doctors' knowledge, their views on its use in practice and their ideas on its concept, visibly threads through the transcripts (appendix 11, p 277)

Terminology

This study will be referred to as the *current* study in order to distinguish it from references made to other already published studies in the literature.

4.1 Initial results-five initial topics

After creation of the analytical framework, the results of the familiarisation stage led to the creation of five initial topics:

Doctors' experience of ultrasound scanning in early pregnancy (yellow text boxes)

Doctors' perspective on fetal anomaly screening (20 week scan) (pink text boxes)

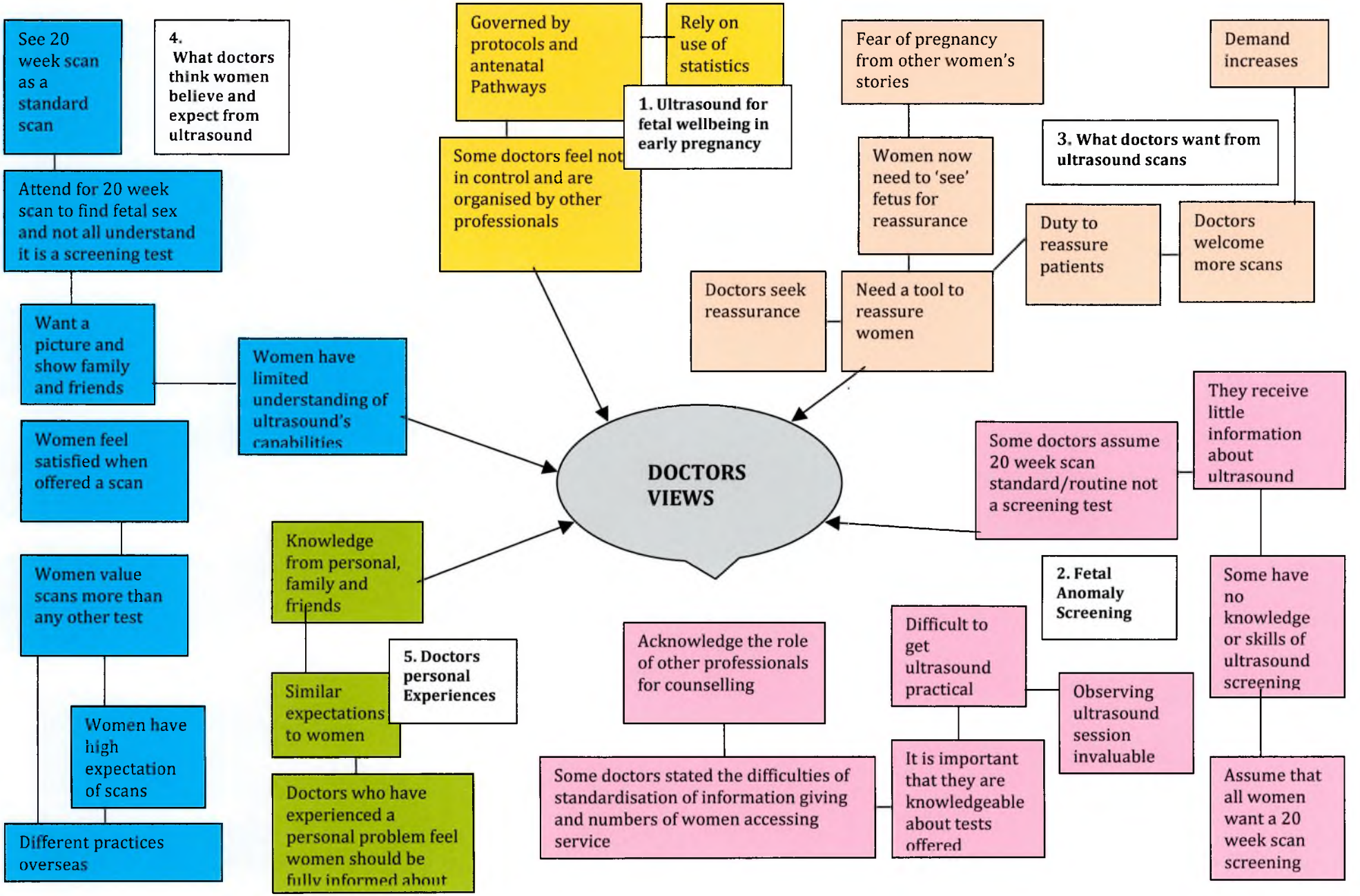
What doctors want from ultrasound examinations? (brown text boxes)

Doctors' thoughts on what women believe and expect from ultrasound (aqua text boxes)

Doctor's own experiences (green text boxes)

A diagram depicting the clustering of the points from the framework into five initial topics is seen in figure 6.

Figure 6. Clustering of the doctors views into 5 topics



The results from these five topics of discussion are considered below:

In order for cross referencing between the results and the raw data, the data from the interviews are highlighted against the results with the names of the interviewees being replaced by the interview number (e.g. I1 for the first interview) and where in the transcript the quote has been lifted, is indicated by the letter 'p' followed by a number (e.g. p1- relating to the first paragraph or piece of dialogue). All transcripts can be found in appendix 13 (p 324)

4.2 Doctors' experience of discussing ultrasound use in early pregnancy assessment (Topic 1)

4.2.1 Doctors' knowledge from clinical care pathways

Doctors described how their knowledge comes from following the automated care pathways for dealing with problems relating to early pregnancy and the implementation of these pathways comes from an induction program at the start of the new job:

> *"It's a lot of pathways and sort of knowing the minimum gestation that you can pick up in an ultrasound scan. It would have been nice to have had a bit more, of that sort of information, in the induction, rather than trying to pick it up as you go along." (I6:p17)*

The doctors made reference to the need for adherence to the clinical pathways when working in early pregnancy assessment:

> *"Usually what happens is, when they come in, the nurses see them first and they will say to the nurses when am I getting my scan and the nurse will explain that it doesn't happen like that,*

so by the time we come round to see them they have kinda got into their minds that they are not getting a scan, it is then so much easier to talk to them. The nurses bear the brunt of that (small laugh)" (I1:p17)

4.2.2 Negative feelings from working in early pregnancy assessment

Some junior doctors feel that when working in the Early Pregnancy Assessment (EPA) ward they are not in control and are organised by other professionals:

"...It is quite impersonal from the doctor's point of view... we are informed that this person needs of scan. I don't feel I have a lot of personal input into explaining what will happen to the lady or what she's going to expect or what we are looking for or why we are doing it as so often quite a lot of implied knowledge of the woman really may be quite slightly skewed as a medic but I think it is perceived as women presume they're going to be getting the scan in their pregnancy and it is all pretty much run of the mill ...

...I feel that nursing staff says 'sign the card' or 'she needs a scan', 'put in this form and hand it in', it just happens without having much communication with the woman (I5:p4)

Some comments from senior doctors implied that junior doctors might be deskilled in some areas by the implementation of clinical pathways:

"...As an SHO, and as a Registrar I was the person looking at the early pregnancy patients and I worked (where) they would do anything between 5 and 10 patients at night, all be clerked,

seen by the juniors and then they would go off and have their scans, however we would examine them before they went on for their scans and we would reduce the number of patients requiring the scan. Bring things forward to 2002/3 ... this time there was a proforma filled in by the nurse, they would be scanned, the viables would go off and then the doctor would examine the others". (I8:p7)

Doctors feel very strongly that ultrasound scans are now more significant to women in early pregnancy than any other test or examination. They feel pressured as women want scans when they have no clinical symptoms that fulfil the need for referral through the clinical care pathway protocol:

"... That many a time that when they are bleeding and it is a threatened miscarriage and she is not bleeding a lot and we have found (heard with sonicaid) the foetal heart and they still want the reassurance of the ultrasound scan, we have declined" (I3:p17)

4.2.3 Doctors' views on what is driving the demand for ultrasound scanning

One senior doctor considered that the advancement of technology has driven the demand for ultrasound in pregnancy:

"Basically, when I was young, we used to keep a picture of when we were first born. Now they want to keep a picture from in utero situation... where women want to be reassured and by listening to the fetal heart by sonic aid is not good enough in

the present day when science has given us so much. You can actually see something now" (I7:p7)

Some doctors felt that women's expectation of scans in early pregnancy is high:

" In early pregnancy, some of them are told that they will be scanned that day and they seem quite angry when you explain to them that this is not how it works" (I1:p5)

One doctor indicated that women are faced with pressure from others:

"Society has a pressure. I think that it does matter and the people they talk to. They are getting more and more information and they talk to people who have had a previous experience." (I3:p6)

Doctors valued the use of ultrasound to reassure women, even when the fetal heart could be heard on the hand held heart monitor:

"If the patient is not happy and requires reassuring that it does not serve the purpose of her coming to us, if we cannot reassure her... it would be right for me to put myself in her place... I would feel that my duty would be to offer her a scan". (I2: p9)

But this doctor believes women think that only an ultrasound scan can provide them with reassurance:

"... The lady, a few weeks ago, had a dating scan in the same situation, and she did not have any previous miscarriages. The guy is a GP, but he could not understand that because we had heard the fetal heart they did not require another scan." (I2:p11)

Not all junior doctors had experience of discussing bad news with women, with one stating that they only had a miniscule of experience and although they had shared bad news with patients in other fields of medical practice, they had not received any training or support in this post specifically relating to loss in pregnancy, however one doctor felt that the specific training for supporting women in pregnancy loss was probably not required:

> *" ...Already having done a fair amount of breaking bad news and things and we apply the kind of skills that we get taught quite early on... when you have to tell relatives that someone has died... I haven't really had any specifics for training in that particular thing but I would not really say that it is a need at the moment." (I4: p21)*

A junior doctor stated that he was a big fan of quoting figures and that it was a help to him as he felt that women would be more accepting, when they had to discuss bad news if they had some figures or percentages to back the information up with. However, another junior doctor who also preferred to quote figures when discussing poor outcomes from ultrasound scans obtained their statistics from listening to other junior doctors quoting them. Two of the junior doctors liked to quote figures and statistics in order to help them feel more confident when they spoke about the ultrasound findings:

> *"We quote figures to ladies in that situation, we tell them that 1 in 5 early pregnancies end in miscarriage but we also tell them another thing that if that first ultrasound shows fetal heart is a 90% chance that the pregnancy will be fine after that." (I1:p1)*

4.3 Doctors' perspective on fetal ultrasound screening (Topic 2)

There is a mixed reaction in the views expressed by the doctors, over the idea of counselling women for considering ultrasound use for fetal anomaly screening. One junior doctor did not consider the job of discussing fetal anomaly screening with women as specifically a doctors and appeared to have very little understanding over what the examination entails, with another junior doctor stating that he did not have the necessary facts or information to discuss the anomaly scan with women if the situation was to arise. Only the senior doctors felt they were able to provide necessary information about ultrasound screening if it was needed, but no doctor during the interviews suggested that they always discussed the idea of the 20 week scan being a scan to screen for fetal anomalies with women during the antenatal consultations.

4.3.1Other professionals' role in offering fetal anomaly screening

Several doctors accepted that other professionals played a large role in the process of offering screening to women in pregnancy. The data suggests that doctors understood that midwives provide the initial counselling for screening, with one doctor explaining that he thought that if women had any questions about the anomaly scan then they would contact their midwife:

> *"...If they have any bursting questions, which could well relate to the anatomy scan then they will fire them at the midwife". (I1:p18)*

One doctor did raise a concern that there may be a lack of standardisation with regard to counselling women for screening tests:

"... Unfortunately we, I don't get to council each and every woman. They get counselled by midwives and there is no standardisation with that" (I2:p6)

Another doctor emphasised her opinion that the midwives role was more important than their own in relationship building with the women and felt that it did not matter who offered counselling for the screening tests. In terms of providing women with information, one senior doctor was led to believe that all the doctors do try to provide information, however another doctor made the point that during clinic, she does not discuss any details about the anomaly scan:

"As a routine, like today, within antenatal clinic, I didn't discuss it, I saw a few bookings but we just routinely say "your scan will be booked"... presuming that the midwife has already spoke to them about it."(I3:p15)

Too many women accessing the service, was stated as a reason why one doctor does not discuss the idea of ultrasound screening with women during the consultation:

"I would like to be involved but I appreciate that the sheer numbers is the big issue really and that is the difficulty and that is where it falls down. Ideally we should sit down and have that chat, be properly counselled rather than just imply that they, presume that they know why they are going for the scan" (I5:p14)

One senior doctor suggested that working alongside the antenatal screening coordinator during an invasive session would provide useful training for junior doctors, in terms of providing some understanding of the implications of ultrasound screening tests, but she

explained that this contact would only be possible if the junior doctors voluntarily organise this observation opportunity.

4.3.2 Doctors' knowledge of fetal anomaly screening

The majority of the junior doctors felt that they had very little information about anomaly screening with two believing that they did not have the skills and knowledge to discuss this commonly used screening test:

> *" We don't go in for what we look for though generally I don't know what the rate of picking up anomaly is but if it was significantly high then its something we should know" (I1:p2)*

> *" I think that if I had been asked by women I was offering ultrasound to, any specific questions, I would have felt quite under equipped". (I5:p12)*

One doctor described how in his training, only the Down's screening test (commonly referred to by doctors as 'the bloods') was described during their learning as a screening test to which women were given the option but that the 20 week scan (fetal anomaly scan) was described as a standard examination that was routinely performed:

> *"The bloods were always taught as a screening test, but the anatomy scan always did seem part of the antenatal care plan as you can see so much on it, and it's something that they can have"(I1: p9)*

One junior doctor stated that she received no information or training from the university about fetal anomaly screening and it is only when more experienced doctors need to

prepare for the fellowship examinations that doctors require to equip themselves with knowledge and understanding of the capabilities of ultrasound imaging. However, one doctor highlighted that as work demands are high, the difficulty she had experienced in a previous post, was in getting hands on experience of ultrasound imaging:

> *"...I haven't had much exposure to, because it is always creamed off into the specialist area and we just worked as a general dog's body in the antenatal unit" (I4:p23)*

4.3.3 Doctors' thoughts on women's expectation of anomaly screening

Two doctors felt that women wanted to know that everything was alright, and thought that this was why women wanted the scans, they both felt it was important to explain that the test was to look for abnormalities, with one believing women expected too much from the scans and perhaps women did not fully appreciate that only major abnormalities can be picked up. They expressed the viewpoint that women's expectations are high and women get upset if a minor problem is not picked up. The doctors thought that women see fetal anomaly scanning as routine or rather expected:

> *"Yes, now, I do think that they see it (fetal anomaly screening scan) as part of the antenatal pathway."*
> *The triple test is always something that is looked at as being offered but the as I said the booking bloods, the anatomy scan, they are just sort of standard things like (I1:p7 and p8)*

4.3.4 'Informed Choice'

The idea that women need to make an informed decision to opt in for fetal anomaly screening (20 week scan) was not always understood by all the junior doctors

interviewed. The concept of 'informed choice' was explained clearly by one doctor who was also coincidentally, participating in some observation sessions in the ultrasound department, however, another doctor talked about how he told the women they were having an anomaly scan:

> *"We tell them they are having an anatomy scan at 20 weeks to check the baby is all right.*
>
> *... It's never sort of something they can accept or decline. It is always something that you will have the scan, without sort of forcing it on them, it's one of those things like it is assumed that everyone will want it when we talk about it" (I1:p2 and p6)*

In terms of the perception of 'informed choice', one doctor described the idea of offering the screening as 'interesting:'

> *"...And that was an interesting concept as we were considering asking for permission and that is when I realised that you have got to ask the people whether they want screening, not just tell them that that we screen" (I2:p12)*

Not all of the doctors understood that women should be given the option to opt for the fetal screening test (20 week scan) and some doctors believed that women do not realise or feel they have a choice in terms of screening for abnormalities:

> *"I think that they don't see it as a choice, they just see it as something that happens and they don't really consider it as something that they could choose to have or not" (I4:p4)*

One doctor believed it was not the doctors' role to raise the issue of 'informed choice' because it was understood, from the care pathway protocol, that midwives discuss testing with women. One doctor did describe how she (the doctor) offers a little counselling regarding the 15 week blood test (Down's risk calculation), but she felt that midwives were better at it, however, she explained that they (doctors) did not offer any discussion about the fetal anomaly scan (20 week scan) as they generally assume that women will have the tests.

4.3.5 Women's expectation of doctors' knowledge

One doctor raised the point that women generally expect doctors to have knowledge of the tests:

> *"Well I think that any test that you are sending a patient for, you need to have an understanding and be able to answer their questions, be able to counsel them on the test and explain outcomes" (I6:p26)*

Yet, several of the junior doctors, when asked about what information they have received from their training or what they know about fetal anomaly screening, seemed vague over their understanding, demonstrating a lack of breadth of knowledge:

> *" I don't think there is anything specific that I have been given... there has not been any information given to me" (I6:p23)*

One senior doctor relates the problem of junior doctors having a lack of understanding, to a lack of time spent by them not 'observing' ultrasound examinations:

"... A part of the complications for juniors in training is the need for juniors they should be observing... and see when you are doing a 20 week scan, when you start, what you say and what you say after" (I7:p12).

The lack of breadth of knowledge is reiterated by the opinion of a more senior doctor, that believes that junior doctors new to obstetrics and gynaecology, may think that the anomaly scan (20 week scan) is 100% accurate and this senior doctor feels that they (junior doctors) probably would not have any knowledge of Down's syndrome screening (NT screening). This senior doctor explained that he would expect the junior staff to pick up this information as they gained experience in the field. Another senior doctor stated that it would be expected that the junior doctors who wish to become obstetricians, would make themselves aware of the relevant guidelines and information available:

"If they are going to be obstetricians then they ought to understand the limitations of scans and there are green top guidelines, consensus reports from the college that they should be aware of, but yes I would like to think that they are more aware but I could not vouch for it" (I8:p18).

This senior doctor also made the point that by having some training in ultrasound scanning, it possibly does make you more aware of what women feel and expect from obstetric ultrasound scans.

"I think if they have had some training then yes they do realise what hopes women have when they come for a scan."(I8:p17)

Several doctors did feel that they knew what women expected from the scans with the majority of them suggesting that women value ultrasound scanning very highly:

> *" I have never met or had the experience where someone has said that they do not want the scan. It is normally the other way around where they are desperate to have a scan" (I4:p19)*

4.4 What doctors want from obstetric ultrasound imaging? (Topic 3)

The doctors described the role of ultrasound as a useful tool for providing women with reassurances about their pregnancy:

> *"...Many would take repeated scans as a way of reassuring themselves that everything is all right as essentially it is because we use them for that as well" (I1:p4)*

One of the senior doctors stated that the opportunity to refer women for more scanning would be welcomed by doctors:

> *" A lot of my clinical colleagues have started doing a lot of extra scanning in the second and third trimesters .I am looking forward to one day when everyone will have some sort of scan rather than the foetal heart monitoring...(at every visit), just have a scan, a quick one" (I7:p3 and p18)*

4.4.1When doctors feel reliant on obstetric ultrasound

As well as using ultrasound to accurately date the pregnancy, assess fetal biometry and provide mid term screening for abnormalities, a senior doctor described how requests are made for ultrasound examinations to rule out any problems that they may not be

aware of. This doctor raised the issue of using ultrasound to monitor growth for a condition that they claim does not have growth restricting implications:

> *"If you see our protocol, abnormal liver function tests do a growth scan, cholestasis in pregnancy, then do a growth scan. It doesn't have anything to say that growth is restricted, but it has become our practice. That is our practice and that is what I do" (I7:p4)*

4.4.2 Women's reliance on obstetric ultrasound

Several doctors' comments suggested that they believe that women's expectations are increasing and their reliance on ultrasound is high:

> *"...Their expectations are getting more and more, they need that, science has advanced and they think that you should know everything" (I3:p10).*

> *"I think most women desire a scan and their eyes flicker when you say they are going to have a scan and some of them even demand on grounds that are not scientifically founded. We are finding a lot of these women are going to the private sector to get the scans done (I7:p5 and p6)*

One doctor talks about how, occasionally, women may request less scans to monitor the growth of their baby, but added that generally women desire more scans, especially if their community midwife has raised the concern that they may be measuring small for their gestational age.

4.4.3 Doctors feel a duty to reassure women

Several doctors both junior and senior grades, described how they felt a duty to reassure women during their pregnancy and explained that it was important to consider both the psychological needs as well as the clinical needs of the woman:

> "We *have to keep in mind the woman's mental state and not just the clinical impression" (I2:p9).*

One doctor raised the point that women need more reassurance than just the feeling of reassurance that was once associated from fetal movement. A point raised by a senior doctor implies that doctors are also looking for more reassurance as they are tending to request more scans to search for any problems that they may not be aware of, almost an unofficial screening.

4.5 Doctors' perception of what women expect from obstetric ultrasound imaging (Topic 4)

4.5.1 Women's satisfaction

Doctors believe that women feel satisfied when they are offered a scan and value it more highly than any other test offered:

> *"For the women its probably got more of a sort of significance than a blood test or something, especially if they get shown the pictures and they can see the baby...They have been asking "am I going to have a scan?" as if that seems more important to them than other investigations" (I6:p5)*

They claim that women do not feel as if they have had a full assessment if they have not been offered a scan. However, some doctors believe that women's level of satisfaction appeared to be linked with the outcome of their scan. Two doctors made reference to women's level of satisfaction in an overseas setting:

> *"Women were satisfied if you just showed baby was alive" (I3:p4)*
>
> *"Some women were dissatisfied (because if they) didn't sign up for screening (they were) not scanned" (I2:p2)*

One doctor commented on how women are dissatisfied when you say that ultrasound cannot provide total reassurance:

> *" Their expectations are getting more and more, they need that, science has advanced and they think that you should know everything" (I3:p10)*

4.5.2 Doctors' thoughts on women and the community's perception of ultrasound availability

One doctor commented on how women display a feeling of anger when they are told that they cannot have an immediate scan:

> *"Some of them are told that they will be scanned that day, and they seem quite angry when they you explain to them that this is not how it works". (I1:p15)*

One doctor thinks that because ultrasound has become a commonly used tool, then women and society take it as expected, but the doctor believes that this is not always a good thing:

> *"So I think it has become the norm but it is not always a good thing"(I8:p2)*

And because ultrasound scanning is used routinely then this has increased women's expectations of the examination:

> *"Because it is more common place then their expectations go up" (I3:p11)*

4.5.3 Doctors' thoughts on women's knowledge of the fetal anomaly screening (20 week scan)

One junior doctor stated that before they observed an ultrasound session and talked with the ultrasound practitioner, their level of understanding of the role of ultrasound and its capabilities and limitations, was similar to the women who were attending for the scans. Another junior made the point that women may not distinguish routine antenatal care with its examinations and tests, from the screening tests offered:

> *"20 week scan probably we view it and they view it as something that just happens. And I think that a lot of women are not aware that it is screening they think it is just to find out the sex I don't think they are always aware of the reason behind the test"(I4:p7)*

In fetal anomaly screening, one doctor felt that it was not seen as something they choose to have but rather they expect it is a standard part of antenatal care. One senior doctor acknowledges women's lack of understanding of ultrasound limitations, but accepts that the issue of lack of time puts a constraint on how well we counsel the women:

> *"But I do not think we have the time and in an ideal world I think we could all each time spend 2 minutes saying at booking, at the dating please do not rely on the scan", (I8:p19)*

4.5.4 Doctors' thoughts on fetal 'sexing'

Several doctors feel that women attend for scans because they wish to find out the sex of their baby:

> *"What the ladies want to know is will they be able to find out the sex of the baby at that scan" (I1:p2)*

> *"...And I think that a lot of women are not aware that it is screening they think it is just to find out the sex I don't think they are always aware of the reason behind the test" (I4:p7).*

One doctor explains the position of fetal sexing when they worked overseas:

> *"But in India, they were very particular, especially if they had had a previous female child because it would lead them to go for a termination. And in India now it has been banned, sex determination is banned" (I3:p8)*

One senior doctor would prefer that fetal sexing were not offered in the UK:

> *"It is a shame that we can now tell them the sex of their babies, personally, I think it would be better if we didn't". (I8:p19)*

4.6 Doctors' personal and professional experience (Topic 5)

4.6.1 Doctors' experience of working abroad

One doctor spoke about their experience, over ten years ago, when she worked in the Middle East. The doctor explained that there was no screening offered and that they just did a scan for reassurance to look for the fetal heart and determine the sex. She made the point that all women wanted to know was that the baby was well formed and whether it was a boy or girl and that the women would not have worried if it there was an abnormality as they would just accept it anyway:

> *"All the patients' want is reassurance that the baby is well formed and that they would not be worried if it had an abnormality and if there is then they accept it" (I3:p4)*

In comparison, a doctor who has worked in parts of Europe described the situation where women have a scan at every antenatal visit for reassurance:

> *"I think comparing if you are in the European community, I have been to Spain and France, I think most women in each visit get a reassuring scan and perhaps because the NHS is free, it is difficult to, What I am looking forward to one day when everyone will have some sort of scan rather than the*

foetal heart monitoring or the foetal heart listening rather than just have a scan, a quick one" (I7:p18)

4.6.2 Doctors' thoughts on in house training

A senior doctor considered that more support and information about ultrasound would be beneficial to both new starts and more experienced doctors:

"I would think that anybody who comes into the unit.... A refresher for those there might be a few things that I am missing... But if I was given a reminder then I would talk about it and I would find a regular refresher perhaps about every 6 months about what we need to discuss or tell the patient and what is the right thing to tell the patient. This would let the new comers know and tell them what the limitations are."(I3:p19)

One doctor indicated that there were learning opportunities within the weekly lunchtime meetings and she commented that the concept of antenatal screening is discussed but only occasionally:

"We do have a special postgraduate meeting every Wednesday. One of the few topics, the high risk topics and once in a while we do have antenatal screening... but I would probably think it is once a year. "(I3:p20)

A junior doctor, who was involved in some mandatory ultrasound training around the time of the research interviews being undertaken, stated that she was improving her knowledge because it was required for the examinations and assessments that are

incorporated in the qualification and they expressed the difficulty doctors have of accessing ultrasound training from experienced ultrasound practitioners:

> *" I am training ....So I am reading a lot, like the college guidelines about early pregnancy and all that... I think that this is a really good issue for there is a lot of training, ...in a presentation on a survey of trainees, in London and their ultrasound experience and their difficulties with getting training and teaching ... One of the things that came out of it was that a lot of them were taught by other people who are doctors, who haven't been properly trained, which is, when they are saying it is something that is mandatory and we are all going to be doing, then I think it is a shame" (I4:p14 and p33)*

One doctor explained that it was only when it was quiet in clinic that they (doctors) were able to observe ultrasound scans. A junior doctor stated how useful the observation sessions that he had managed to organise was and how informative they had been:

> *" Having spent some time down in the ultrasound department, over the last couple of weeks and actually having a session with a practitioner and them saying this is what we are looking for and this is what it looks like. I thought that what a real eye opener (I5:p21)*

One senior doctor explained the problem of lack of time available to provide observation sessions:

> *"There has been loads of discussion but it's all a question of having dedicated time and we are all mindful of service provision. So it has been discussed but I do not think it has been satisfactorily sorted." (I8:p16)*

4.6.3 Support for junior doctors

One senior doctor believes that it is important that we support junior doctors in understanding the capabilities and limitations of ultrasound imaging:

> *"I think that is absolutely a must and I think a part of the complications for juniors in training is the need for juniors they should be observing. That could be part and parcel of his or her knowledge and then give them an explanation. (I7:p12)*

When asked about inter professional working and the role of the induction program for new doctors, one senior doctor was concerned about not making the induction program too long:

> *" It is important... We have induction, but to draw a balance between service delivery and induction, we had a half a session induction, ten years back and now we have one and a half days induction to help include what we need to include." (I7:p17)*

However, this doctor also responded with a worry that a one off talk about communication and counselling would not be enough to provide the junior doctors with the right skills to discuss with women about ultrasound use:

> *"No, the reason because most of the juniors have not gone through the training of communicating of having not been trained and this comes with time. One off training in communication is not good enough for them to be a natural communicator and we are picking up a lot of these cases, where they have been misinformed or informed in a way that has been misconstrued and we are picking up the pieces and have to see those patients again and reassuring them. (I7:p11)*

4.6.4 Doctors' experience of discussing ultrasound imaging with women

One junior doctor had a concern that they had no experience of how unfavourable ultrasound results are discussed with women and had not encountered any experience of this:

> " *When I spoke about the one that found that they had a normal scan and then a few weeks later, the baby died in utero, I am not really sure how to say what their thoughts about ultrasound would be... But I have never actually seen or been in the ultrasound department or seen a scan when the scan*

has been put on and the baby has not been alive. I am sorry; I have not had that experience..."(I1:p12)

One doctor who has experience in performing ultrasound scans, described the antenatal pathway and stated that she probably makes assumptions with regard to whether women understand the tests that they are being offered:

"Most of the time I either see documented that this has been discussed or maybe I have presumed wrongly that this has been discussed and that my role is probably, in that short space of time that I have that's probably different so we don't spend much time discussing it with them" (I4:p10)

There is some thought that by providing women with an ultrasound scan helps them to bond with their baby, but only one doctor (with no ultrasound experience) mentioned this:

"Because it offers them as their bellies growing and they're getting movement, they actually get to see the baby growing and I think some of them see it as a bonding experience as well, though. It helps them to orientate themselves to the fact that they're going to be a mother" (I1:p11)

4.6.5 Doctors' own personal experience of obstetric ultrasound

One doctor stated that when they were experiencing an ultrasound scan he just thought they could confirm that everything was all right:

> *"Going in there you just want to know that everything is alright"(I5:p9)*

Another doctor described how they (the doctor and her husband) were not prepared for the scan result that they received:

> *"Because I was not expecting things to go wrong, when we had the tests, it just hit me that things are not normal, I couldn't accept it and from that point I feel that people should be prepared before they go for the tests... (I2:p23)*

However, this doctor had not received any mandatory ultrasound training prior to her experience and was early into her training as a junior doctor. On reflection, this doctor now sees how she was in denial over the result of her scan that came back reporting a poor outcome:

> *"...And then we had Doppler abnormalities (absent end diastolic traces) and I made the doctor do the Doppler three times or even four times and even before the section" (I2:p22)*

One doctor felt that perhaps she did seek more reassurance than other women because of her knowledge and understanding as a doctor as well as a parent. This doctor

believes that both doctors and women have the need for reassurance, but probably doctors need more reassurance because of what they already know:

> *"I would say that I think the same thing applies although all patients are not medical personnel, but what applies to us does apply to anybody".*
> *(I3:p3)*

> *"I would think probably because we are looking for more probably the patients do not understand as much as we need do, we are probably looking more into it (needing more reassurance)" (I3:p4)*

For some of the doctors, they describe how their personal experience has changed their ideas about the capabilities of ultrasound:

> *" It has changed it a bit in the sense that because I was not expecting things to go wrong, when we had the tests, it just hit me that things are not normal, I couldn't accept it and from that point I feel that people should be prepared before they go for the tests" (I2:p23)*

One junior doctor stated that it was from his friend's experiences of antenatal care that has provided him with his understanding of ultrasound imaging:

> *" I have friends and colleagues who are all having babies and who are going through the process of antenatals, some are*

having infertility treatment with ultrasound monitoring of fetal growth, so there are a lot of personal experiences as well as professional experience, but there again professional experience has not been particularly taught" (I5:p4)

An important point raised by a junior doctor was the different perception doctors can get from reading textbooks and lecture notes to having a personal experience of ultrasound scanning:

"I think it has become, from recent reading and preparing for the job, it has become clear that there is a larger role than I thought and I guess that's the difference I think, between reading and personal experience and professional learning, having had a fairly normal pregnancy, with my daughter and having a couple of scans and that's it. I knew what they were looking for, or rather I knew a little bit about what they were looking for, but I didn't appreciate just how much and in how much detail the scanning is" (I5:p6)

A summary of the five initial topics of discussion can be found in appendix 17, p 351. Through lengthy scrutiny and manual analysis of these topics, three strong themes emerged.

4.7 Three emergent themes

By the researcher re reading the transcripts and refiguring the charts and memos from the five initial topics, three themes emerged that make up the main focus of the doctors' perspective on obstetric ultrasound imaging: **doctors' knowledge and understanding of obstetric ultrasound imaging, doctors' views on the practice of ultrasound imaging and doctors' ideas on the concept of obstetric ultrasound imaging.** The

data within the charts of the five initial topics of discussion (appendix 11, p 277) have been colour coded to show how by manual reorganisation and mapping and interpretation the three themes emerged from the data. Data relating to doctors' knowledge has been highlighted in yellow, their ideas on the concept highlighted in green and their ideas on the practice of ultrasound use highlighted in pink. The colour coding demonstrates how each theme threads through the whole data set. The colour-coded charts can be found in appendix 11, p 277 and a summary can be found in appendix 17, p 351.

Conclusion

The aim of the study has been to explore the medical perspective on obstetric ultrasound use, to determine whether doctors are already active agents in providing women with unbiased information on routine ultrasound imaging. Through qualitative in depth interviewing and following the 'framework analysis' model, advocated by Ritchie and Spencer (1994), the analytical framework was formed containing 56 ideas that emerged from the initial analysis of the eight interview transcripts. Clustering of comparable ideas identified five initial topics of discussion from which the data set was charted and the data analysed manually, using memos and mind mapping, from which emerged three broad themes emerged. These three themes: doctors' knowledge and understanding of obstetric ultrasound imaging, doctors' views on the practice of ultrasound imaging and doctors' ideas on the concept of obstetric ultrasound imaging are discussed in Chapter Five, in relation to the research question, whether doctors are active agents in the process of information sharing with women about routine obstetric ultrasound imaging.

Summary of Chapter Four-The Results

Through qualitative in depth interviewing and following the 'framework analysis' model advocated by Ritchie and Spencer (1994), the analytical framework was formed containing 56 ideas that emerged from the initial analysis of the eight interview transcripts. Clustering of comparable ideas identified five initial topics of discussion from which the data set was 'charted' and the data analysed manually, using memos and mind mapping, to which emerged three broad themes: **doctors' knowledge and understanding of obstetric ultrasound imaging, doctors' views on the practice of ultrasound imaging and doctors' ideas on the concept of obstetric ultrasound imaging.**

Some of the issues that emerged included:

Doctors rely on other health professionals to provide women with information about ultrasound imaging.

Doctors believe that women have high expectations of ultrasound imaging and this will be hard to alter.

Some doctors have misconceptions about ultrasound capabilities and often these misconceptions mirror women's expectations.

Some doctors see ultrasound imaging as a tool to provide women and themselves with reassurance.

Some doctors want and believe women want more ultrasound scans.

Some doctors lack information about ultrasound capabilities and limitations and this is more evident in junior grades.

Some doctors derive their perceived knowledge from personal and family or friends antenatal experiences.

In the doctors' experience the application of ultrasound services in other countries is different from the in UK.

Chapter Five – Discussion on the three themes

Introduction

Through exploring the medical perspective on obstetric ultrasound, the aim has been to consider whether doctors are actively engaged in unbiased information sharing with prospective parents about the capabilities of ultrasound use in routine antenatal care. Three themes arose from analysing the qualitative interviews undertaken with doctors, from a local antenatal department. These three themes were as follows:

1. Doctors' knowledge and understanding of obstetric ultrasound
2. Doctors' views on the practice of ultrasound imaging.
3. Doctors' ideas on the concept of ultrasound imaging.

In this chapter, key elements from the works of the French philosopher Michel Foucault, the relationship between self- surveillance, power and knowledge and governmentality are discussed, as they are central to the discussion of the three themes identified from the study.

- **Ideas put forward by Michel Foucault. (1926-84)**

The first element of Foucault's theories is based on the 'Panopticon' jail system developed by Jeremy Bentham (1748-1832), a Utilitarian philosopher and theorist of British legal reform. This was a concept and a model to facilitate understanding of how surveillance is central to the operation of power. When jails were first constructed each inmate was kept in a cell with two large windows, one window facing the Panopticon tower and the other window directly behind the first window. This had the effect of lighting the inmate's cell so that the inmate could be

seen at all times from the Panopticon.

Foucault described the major effect of the 'Panopticon' in his work, *Discipline & Punish: The Birth of the Prison (1975),* as:

> *" To induce in the inmate a state of conscious and permanent visibility that assures the automatic functioning of power. So to arrange things that the surveillance is permanent in its effects, even if it is discontinuous in its action; that the perfection of power should tend to render its actual exercise unnecessary; that this architectural apparatus should be a machine for creating and sustaining a power relation independent of the person who exercises it; in short, that the inmates should be caught up in a power situation of which they are themselves the bearers. "* (Foucault 1975: 195)

This surveillance Foucault called 'the gaze'. The person who is subjected to this kind of 'gaze' cannot know when they are being observed and when they are not. In order to avoid punishments (e.g. solitary confinement) and/or to gain rewards (e.g. parole), subjects generally behave in ways that their observers desire. Foucault's concept of the Panopticon has wide applicability for understanding medical power. In the hospitals the 'Nightingale wards' were designed to facilitate surveillance of both patients and nurses by putting them under the 'gaze' of senior nurses, who in turn were governed by the matron, who ultimately was largely controlled by invisible medical power. It is through gazing, including the invasive technological and surgical gazing, that doctors learn medical knowledge, which is the basis of medical power.

The second element of Foucault's ideas considered was the claim that this power and knowledge are inseparable and that access to the 'scientific' body of knowledge had given doctors, towards the end of the nineteenth century, enormous social prestige and influence. In his first work, *The Birth of the Clinic* (1976) he explained the importance of the relationship

between power and knowledge. Foucault focused on the moment when the medical gaze first comes into being and where the medical gaze partitions the body into its components and essays an anatomy of diseases. Instead of seeing the change as occurring through improved medical understanding and increasing scientific sophistication, the clinical gaze (as Foucault called medical power) enabled medical men to assume considerable social power in defining reality and hence in defining deviance and social order. Why are knowledge and power so intimately connected in modern societies? It is because all the disciplinary practices that pervade such societies, radiating out from institutions and the systems of knowledge that support them, have one central focus: knowledge of man. It is the focus on man that is central in all these institutions and in modern life in general. What is man? What are his inner motivations? What are his needs, wants, aspirations? What are the different types of man? Among those types, which are normal, which pathological? Which are to progress through the normal institutions of society, from birth to school to work to marriage to hospital to cemetery? This modern knowledge of man itself originates in institutions that focus on man, such as the hospital, the asylum, and the prison. In those institutions, the answers to the questions about man are "discovered" and techniques of power are devised to intervene in an attempt to normalize the patient, make him well, sane, or otherwise fit to return to society (Brass 2000). These techniques of power derived from the knowledge base discovered in such institutions work on the inner being as well as the outer frame of the person (Foucault 1979). This ideology implies a form of power that gets a person to do something or to accept the existing order of things through shaping her/his wants. According to Foucault (1982) power is not necessarily coercive, domination and control but is the direction of the free will in that individuals are persuaded to act in the experts' interests. Foucault encourages us to think of power not only in terms of hierarchical, top-down power of the state. He widens our understanding of power to also include the forms of social control in disciplinary institutions (schools, hospitals, psychiatric

institutions, etc.), as well as the forms of knowledge. Power can manifest itself positively by producing knowledge and certain discourses that get internalised by individuals and guide the behaviour of populations. Thus Foucault's (1980) concept of knowledge/power shows that these two concepts are inseparable. This leads to more efficient forms of social control as knowledge enables individuals to govern themselves.

A third element of Foucault's writings relates to the idea of "governmentality", the "art of government" in a wide sense, i.e. with an idea of "government" that is not limited to state politics alone, that includes a wide range of control techniques, and that applies to a wide variety of objects, from one's control of the self to the "bio-political" control of populations. (Foucault 1991). The term governmentality applies to a variety of historical periods and to different specific power regimes and is often used by Foucault (1991) himself in reference to "neoliberal governmentality", i.e. to a type of governmentality that characterizes advanced liberal democracies. In this case the notion of governmentality refers to societies where power is de-centered and its members play an active role in their own self-government. Because of its active role, individuals need to be regulated from 'inside'.

Towards the end of his life, Foucault recognised that most of his own efforts had been focused on the technologies of domination and power to the neglect of the technologies or practices of the self. He believed that this was a serious omission in his work since, in modern society, the conduct of individuals is regulated not so much through overt repression or coercion but rather through subjects' active engagement with recommended or imposed practices which serve to 'normalise' behaviour. Foucault views power as that which allows and constitutes the multiple processes of normalization (Foucault, 1975). In Ritter's (2005) writings about mechanisms for normalization he writes that for Foucault, power does not simply come from above. Rather, it is generated throughout society via different mechanisms. In *Discipline and Punish* (1975)

Foucault writes that although these mechanisms of power and normalization begin as a "carceral archipelago," the mechanisms soon diffuse throughout the rest of society, thereby "transmitting disciplinary norms into the very heart of the penal system and placing over the slightest illegality, the smallest irregularity, deviation or anomaly, the threat of delinquency" He further asserts, "The carceral 'naturalizes' the legal power to punish, as it 'legalizes' the technical power to discipline". Thus, it is not a question of necessarily identifying a source of power but of identifying how power *functions* through various networks and mechanisms and why individuals allow themselves to be punished under the power of legality. Foucault stressed in diverse books and articles the connection between power relations and practices of the care of the self. Hence, techniques of surveillance are necessarily related to practices of self-surveillance. This theoretical framework constitutes the basis for differentiating two historically distinct types of self-surveillance: the first, proper to disciplinary society, is promoted by normalizing power; the second is associated to the increasing relevance of the epidemiological concept of risk in the problematizing of health-related behaviors. Epidemiology of risk factors, medical testing and genetics are opening up a temporal gap between the diagnosis of illnesses and their subjective symptoms. This gap is equivalent to a space for individual 'pre-emptive' action against possible illness or disease.

These three elements of Foucault's ideas, power/knowledge, governmentality and the idea of self -surveillance through risk theory are fundamental to the themes that have emerged from the study of the doctors' perspective of obstetric ultrasound use and the following discussion looks at the three themes that emerged from the study data in relation to these elements of Foucault's writings.

5.1 Doctors' knowledge and understanding of obstetric ultrasound (first theme from the data analysis)

The chart in the data analysis appendix 18 (p 355), demonstrates a variation in what and how much knowledge each of the doctors have of obstetric ultrasound imaging. This information shows that only doctors with some training in ultrasound described some knowledge of its capabilities and more importantly of its limitations. It shows that the understanding the junior doctors had comes partly from their lectures as medical students and partly from their own personal and their friend's encounters with antenatal care. In university education, in order to deliver the curriculum, lecturing or large group teaching is established, as they are an efficient means of transferring knowledge and concepts to large groups. The syllabus from the local university medical school includes a lecture on the introduction to antenatal screening, suggesting that students may require searching for support material to supplement their learning. Lecturing or large group learning is a cost-effective way to transfer knowledge to a large number of students (Cantillon 2003). A weakness of large group learning is the problem that it can tend to encourage passive learning (Metcalfe 1998). Students may have received a large amount of factual information from the lecture on antenatal screening but may have had little opportunity to process or critically appraise the new knowledge offered. Finlay and Fawzy, (2001), wrote of their experiences as medical students and how during their time they encountered difficulties with dealing with the large amount of knowledge delivered, as the profession considered that knowing all about everything seems to be the minimum acceptable standard. They described been stretched intellectually to accumulate all the amount of information heaped upon them; however, as medical students they agreed they also had to make the psychological adjustment from learning for the sake of learning, or passing exams, to learning in order to eradicate those gaps in their knowledge that could mean disastrous

mistakes in clinical tests. There is then a time lapse before these medical students begin their training as junior doctors and by then the information delivered during the lecture may well not be revisited through any more discussion. Until relatively recently the method of 'see one, do one, teach one' was the mainstay of the apprenticeship system in medicine. Apprenticeship still continues, but recent advances in medical educational practice have made an increasingly structured approach necessary (Vozenilek et al. 2004). Given equal competence the better doctor is the one who can put himself or herself in the patient's place when explaining the situation and discussing what to do-the doctor as teacher. However, the majority of mandatory training for doctors and medical students in obstetric ultrasound is still focused predominantly on the practical skills of performing ultrasound imaging. Finlay and Fawzy (2001) described the coping mechanism that naturally developed over the clinical training where they distanced themselves to some extent from patients as people, seeing them more as cases of disease. Progressing through the course they had realised that these people became their educational resource, providing them with the essential symptoms and signs that they needed to be familiar with in order to pass their exams. In their writing they claimed that they had gained medical knowledge, but had lost a degree of lay empathy; their reaction when faced with a new patient was not to feel sorrow but to jump to eliciting clues to the diagnosis. They felt they had adapted to fit the medical role and that they had become increasingly isolated as a group and later believed that it was essential that they were allowed and encouraged through future training to develop personally, as interesting and interested individuals so they could feel enriched and motivated in order to become better doctors. Doctors stand at the crossroads of power, knowledge and technology in today's society, knowledge and technology are scarcely separable from power-relations and their effects. Because doctors occupy a privileged place with respect to power/knowledge, technologies, and populations, appropriately mentoring medical students is a crucial part of their social and ethical education (Papadimos and Murray

2008). Medical students must become able citizens who not only possess the critical skills necessary to understand how power/knowledge operates, but they must develop the capacity to expose and to challenge this power, when required – to speak out fearlessly on behalf of their patients, their profession, themselves, and society in general. Medical students must be taught to practice '*free speech*'; they must speak fearlessly (Foucault 2001). This does not exactly mean that they will speak without fear; rather, it means that they will learn to have the courage to speak under fearful circumstances – to address and to critique those institutions or individuals who control more power, knowledge, and technology than the one who speaks. It means "speaking truth to power," as Foucault (2001) has said. Such an attitude, behaviour or value cannot exactly be "taught" as a skill or as a piece of positive knowledge. It calls for an apprenticeship by mentors who will foster such an ethos in their students, who demonstrate '*free speech*' themselves, and who actively encourage new discourses in their teaching, their research, and beyond (Papadimos and Murray 2008). Caring for healthy, pregnant women may be difficult initially for medical students as it is at odds with the true medical role and requires a different mind-set. Pregnancy is not a disease, it is a natural occurrence and caring for the pregnant woman requires a balanced understanding of applying a social with a medical model of care. It is more about empowering women to have control over their pregnancy and requires health professionals to develop a strong emphatic approach; unlike what Fawzy and Finlay (2001) described. However, the difficulty lies as western society has been increasingly regulated and as a result, has become increasingly uniform and standardised. Evidence has always been at the core of the 'medical model', a scientific process involving observation, description and differentiation, which moves from recognising and treating symptoms to identifying disease aetiologies and developing specific treatments (Clare 1980). Furthermore, it is what most doctors do today, and it is what patients expect – the days of treating on 'gut feeling' have long gone. Although some people question how much daily practice is evidence

based (Imrie & Ramey 2001) there is no call to abandon evidence and rely on faith or instinct alone. This assumes that doctors have specific knowledge and expertise that an intervention causes greater benefit than harm, but in the case of offering fetal anomaly screening, this may not always be the case when an abnormality is suspected but turns out to be a false result.

5.1.1 The title 'Doctor'

The doctors interviewed in this study had differing amounts of professional experience, as shown in the table (appendix 12, p 323) indicating the different grades of doctors interviewed in the study. The numerous titles associated with the different levels of doctors experience is not made clear to prospective parents having consultations during their hospital visits and this was raised by one senior doctor interviewed:

I think nowadays, most of the clinics have the names and the women actually know who the consultant is but whether they actually know the difference in the knowledge in the different grades, I do not know whether they are clear about that. (I7: p14)

The terms 'senior' and 'junior' in the medical profession indicate whether or not the doctor concerned is still in training, but this is not obvious to the general public who may see and hear the title of doctor and assume that the professional they are talking with is fully knowledgeable about their care. Junior doctors are doctors in training, often referred to as House Officers, Senior House Officers and Registrars. They will have completed medical school and obtained registration with the General Medical Council (GMC), but will not yet be trained to a level which allows them to work as a consultant, GP or staff and associate specialist. Learning to consider the women's perspective may well be a skill that could enhance junior doctors understanding of what they may describe as a medical situation and may also improve the way information is communicated to women within the antenatal service. As medical students qualify, they enter

the hospital as junior doctors and it is within a work place setting that they learn to apply the knowledge they have learnt in their university education. The hospital is a crucial institution within modern systems of health care, but it is also symbolic of the social power of the medical profession, representing the institutionalisation of specialised medical knowledge. It is the role of the consultants working within the hospital to be responsible for the education and supervision of doctors in training (junior doctors). They also take responsibility for the induction of new doctors, but this type of teaching perpetuates the medical philosophical perspective on caring through to new doctors, as emphasized in Foucault's writings on power and knowledge. The bureaucratic, centralised hospital system has a significant part to play in training of doctors and as an institution it controls the organised power of medical professions however, the ever-visible inmate, Foucault suggests, is always "the object of information, never a subject in communication." (Foucault 1979, p 200)

As described by some of the doctors during the interviews, the information or guidance new doctors receive is delivered through provision of a Trust handbook (appendix 20, p 361) for personal reference and an induction program during their first days in post. A search within the handbook found very little support material for ultrasound screening and the limitations of ultrasound scanning in obstetric care, as the overall content relates to the implementation of the clinical pathways and protocols. Data from interviewing the doctors has highlighted the opinion of two senior doctors interviewed, that they expect junior staff to pick up information as they gain experience in the field and that they expect the doctors whose wish to become obstetricians, to make themselves aware of the relevant guidelines and information available. However this current study has demonstrated a dichotomy with what some doctors consider important i.e. the need for doctors to be knowledgeable about all tests undertaken and the limited amount of knowledge and learning support the junior doctors are given about ultrasound imaging. The onus appears to lie with the junior doctors to identify the appropriate areas of

their role but as one junior doctor explained, it is difficult to know what to ask until you are aware that you need to ask it:

> *"At the moment I am just going through that phase where I don't know the questions that I need to be asking until I encounter them in the clinical setting" (I6:p30)*

5.1.2 How knowledgeable are junior doctors about ultrasound imaging?

One senior doctor described how she felt that some junior doctors may consider they are knowledgeable because they can perform basic measurements required to perform some ultrasound examinations, but that she felt they only have a partial understanding of ultrasound imaging and that they have a gap in their knowledge with the regard to the difference in purpose between ultrasound examinations that monitor fetal wellbeing and examinations that screen for fetal abnormalities. Less experienced doctors who have not observed ultrasound practitioner's pre- counselling discussions with women prior to the scans, appeared unaware that the 20-week scan was, in fact, a screening test. A junior doctor, when asked about the fetal anomaly scan, commented that before they participated in an observation session, their expectations of a 20-week scan matched the women's thoughts about what the scans were capable of achieving. It has only been through observing an ultrasound session that this doctor now feels they have some sense of the expectations women have of the examinations. What may be occurring during the observation sessions, is a form of learning called vicarious role modelling, developed by the Canadian psychologist Albert Bandura (1925), where real events are demonstrated, either successes or failures, with the exposure of the women's own feelings about what is being done. Observational learning (also known as vicarious learning, social learning, or modelling) is a type of learning that occurs as a function of observing, retaining and replicating novel behaviour executed by others.

"I found the time that I spent, in the ultrasound unit extremely useful. It was a real eye opener and it generated a lot of thoughts which gave me a lot more understanding and I believe that would be valuable perhaps to have a session built into the early weeks." (I5:p21)

Doctors with prior experience in the field of obstetrics and gynaecology and who have completed either the basic or intermediate training in ultrasound scanning do appear to have some understanding of the purposes of the different ultrasound examinations, however, even with this knowledge, some revealed that although they appreciate that the 20 week scan is to look for abnormalities, they still not do not always discuss the purpose of the scan with women.

"As a routine, like today, within antenatal clinic, I didn't discuss it, I saw a few bookings but we just routinely say, "your scan will be booked".... presuming that the midwife has already spoken to them about it" (I3:p15)

The study shows that doctors appear to not be actively engaged in information sharing with women during consultations in the antenatal clinic. The barrier to this may be a lack of knowledge about this area of care. Even when the junior doctors acquire some practical skills from later mandatory ultrasound training sessions, there is no formal assessment on their understanding of the ultrasound test's limitations or their appreciation of what expectations women place on their ultrasound scans experience. Revision notes (Leach 2011), sourced from the Internet for medical students, make no reference to the fact that the fetal anomaly scan is a screening test. The material focuses on the option for women to choose to screen for Down's syndrome, during the early stages of their pregnancy and provided a depth of information regarding how this test calculates the women's risk of carrying a baby affected with Down's syndrome. The information regarding the 20-week scan, however, included only a short

statement "*scan for fetal structural abnormalities at 18-20 weeks gestation*", thus implying that women did not require to actively opt into this ultrasound examination.

5.1.3 A gap in the doctors' knowledge

It has emerged that all doctors do not consider the 20- week scan, in the antenatal pathway protocol, as a screening test. Exploring the programme of learning and education offered to junior doctors has demonstrated the fact that there is an imbalance between the amount of information for Down's syndrome screening (NT ultrasound screening) and ultrasound screening for other fetal abnormalities performed around 20 weeks of pregnancy. There are more than five pages of information about ultrasound screening in the induction handbook (appendix 20, p 361), describing in detail the physical testing for Down's syndrome but only four lines of the information about fetal anomaly screening (20 week scan) are provided:

> *Pregnant women should be offered an ultrasound scan to screen for structural anomalies, ideally between 18 and 20^{+6} week gestation, by an appropriately trained sonographer and with equipment of an appropriate standard as outlined by the National Screening Committee (NICE 2003 & NSC 2007).*

It is easy to understand how the junior doctors, have come to consider that the scan is just a part of the routine antenatal care pathway and how they might have no real understanding of the fact that women require to opt into the screening service by verbal consent. It is understandable that, after reading the information in the induction programme, junior doctors can place little or no relevance of their role in supporting women's understanding of the ultrasound scan offered at 20 weeks. Clear and accurate information delivered during a past lecture in the university may be erased by unreliable material and perpetuate any preconceptions the medical students or junior doctors may have developed during their

lectures provided in their curriculum. Materials, such as the fore mentioned revision guide by Leach (2011), could be taken as fact as it is summarised and written in an easy to access format. What is not made clear is the fact that the authors are in fact medical students themselves and that the information has not been specifically and authoritatively peer-reviewed, and as such has not passed scientific scrutiny as to its accuracy. A key point in the General Medical Council's (GMC) Good Medical Practice (2006) describes the need for doctors to keep up to date with professional knowledge and skills. From this study it shows that not all the doctors are conversant with the implications of performing ultrasound imaging to screen for fetal abnormalities. One junior doctor explained that they had not been given any information about ultrasound screening:

> *"I don't think there is anything specific that I have been given. The situation has not arisen yet where I have had to counsel a woman for a screening test as yet, but I guess that when the situation arises, but there has not been any information given to me." (I6:p23)*

So why, even when senior doctors with some understanding of ultrasound use do they not engage in dialogue about ultrasound imaging. This may be due to the point raised earlier, about how doctors are trained by following an 'apprentice' method of learning within their post, they only appear to be taught about the practical aspects of ultrasound scanning although, during the interview with one doctor, she stated the sheer numbers of women seen in the clinics deterred them from discussing with women about ultrasound screening because they felt they did not have the time. This point about lack of time was mentioned several times in the study, in particular by the senior doctors, regarding how much time can be afforded in the induction programme for new staff and to the limit on time spent in consultations with prospective parents. The issue of time constraints and the requirement for the adoption of

efficient methods of care for large numbers of women was the second theme that arose from the analysis of the medical perspective on ultrasound use.

5.2 Doctors' views on the practice of obstetric ultrasound imaging (second theme from the analysis)

The doctors in this study all made reference to the practice of following clinical care pathways. Some felt that when working in the early pregnancy assessment ward they were not in control, feeling organised by other professionals.

> *"... It is quite impersonal from the doctor's point of view... we are informed that this person needs a scan. I don't feel I have a lot of personal input into explaining what will happen to the lady" (I5, p4)*

Consequences of the implementation of antenatal care pathways were raised throughout each of the interview transcripts, with the issue of other professional's roles within the pathways emerging as a major point of discussion. Some junior doctors views were that the task of offering and discussing tests like fetal anomaly screening belongs to the midwives. They thought women felt fully supported and believed that if women had any questions or do not want ultrasound screening then the women would discuss their concerns during these meetings:

> *"If they have any bursting questions, which could well relate to the anatomy scan then they will fire them at the midwife". (I1:p18)*

In an early study by Proud et al. (1995) health professionals stated that they did not routinely offer pregnant women any information regarding the implications of ultrasound screening,

because the women expressed a desire to have a scan. Proud et al. (1995), study although undertaken over a decade ago, may still have some resonance with this study as the junior doctors interviewed described how some of them believe that all women want ultrasound scans. This presumption may lead to some opportunities for discussion about women's options and information sharing regarding ultrasound's limitations to be lost and could be described as an involuntary withholding of information. Withholding of information has been criticised by Beech (1992) because it can lead to ownership of information and denies women the opportunity to make informed choices regarding their care. Women may want the social experience of scanning but it is the duty of all health professionals to support women in decision-making by providing opportunities for dialogue at consultations along the antenatal pathway. Concern is that by either confirming the scan has been booked or by doctors not raising the issue of the scan's purpose, this may suggest that there is no choice in having the scan. Even if women initially think there is a choice then they may feel that they should opt for the 20-week scan as indirect pressure is placed on them to conform (Foucault's idea of self surveillance 1985) because doctors are referring to the scan as standard procedure and that to decline would go against the advice of medical practice, demonstrating Foucault's point of the action of medical power over the discourse between the women and the medical staff (Foucault 1979, 1991)

One explanation for women's positive attitudes towards ultrasound scanning could lie in the uncritical faith in medical expertise inherent in the traditional 'doctors know best' ideology, which influences women's attitudes as Foucault discussed in his demonstration of the close relationship between power and knowledge (Foucault 1980). In support of this opinion, Stapleton, Kirkham and Thomas (2002) also believe, through their work on informed choice, that women are led towards 'informed compliance' rather than 'informed choice' since; in their findings it was difficult for women to challenge it. As Foucault argued, power can manifest itself

by producing knowledge and certain discourses that get internalised by individuals and guide the behaviour of populations (Foucault 1991). This leads to more efficient forms of social control as knowledge enables individuals to govern themselves. Modern disciplines, systems of surveillance and control are focused on the body and its reproduction. Medicine is one aspect but another is the general regulation of bodies, a process Foucault (1991) termed 'governmentality,' which he claimed was a characteristic of modern societies. NHS FASP, the government's fetal screening programme is an example of Foucault's suggestion that the conduct of individuals is regulated not so much through overt repression or coercion but rather through subjects' active engagement with recommended or imposed practices which serves to normalise behaviour. Guidance from the NHS FASP (appendix 2, p 239) states that it is the duty of health care professionals to provide pregnant women with adequate information to make an informed choice, however when considering Foucault's writings, it is possible that women may never be able to make a truly conscious informed choice because of the pressures that exist from society as well as their own self governance (Foucault 1991).

In order to comply with clinical governance and streamline the care given to pregnant women, antenatal care pathways were created into which routine obstetric ultrasound examinations were established. All pregnant women accessing care follow through the pathways and are automatically offered ultrasound scans as set out in the antenatal time line of screening tests (appendix 3, p 240)

5.2.1 Clinical Governance and the development of 'Pathways of Care'

Clinical Governance 'is doing anything and everything required to maximise quality' (Brayford et al 2008) It is about finding ways to 'implement care that works in an environment in which clinical effectiveness can flourish by establishing a facilitatory culture' where at the same time, underperformance is weeded out. Health Care purchasers and providers are being put under

increased pressure to improve clinical effectiveness, reduce costs and achieve a high quality of patient care. 'Pathways of Care' have developed in response to this demand: delivering services, assessing patient outcomes and improving the coordination of care. Integrated care pathways can be used to facilitate the development and implementation of multidisciplinary guidelines, minimize delays and use of resources while maximizing the quality of patient care, specifying each anticipated treatment event and the communication process (Ignatavicius et al. 1995; Campbell et al. 1998). Benefits include increased collaboration, increased professionalism, more effective clinical care, improved clinician–patient communication and patient satisfaction (Dalton et al. 2000; Kaltenthalter et al. 2001) Disadvantages of this approach have been identified as the limited evidence for their potential to improve patient care, their focus on cost rather than quality, a dissonance between the managerial and clinical expectation and limited scope for professional development. In addition it has been suggested that they led to a reduction in clinicians' status and discouraged appropriate clinical judgment being applied to individual cases (Luc 2000; White et al. 2000; Campbell et al. 1998). Jones (2001) raises the interesting question as to how the different professionals respond to having their philosophy and practice shaped to fit the requirement of a care pathway. Criticism is directed towards researchers for not commenting on inter-professional relationships when designing care pathways and presuming that professionals will readily deliver their interventions via such a pathway. Luc (2000) is of the opinion that the process of developing the pathway is an ideal opportunity to develop multidisciplinary teamwork. Currie and Harvey (2000) suggest that to overcome the problems of 'cookbook' medicine a program of education is needed, which reinforces the message that the pathway should only be used for guidance. However, White et al. (2000) are of the opinion that managed care has a profound effect on inter-professional collaboration and teaching.

Health professionals, including doctors, have different roles within the care pathways and the role of offering fetal ultrasound screening generally lies initially with the midwives with the ultrasound practitioners then seeking women's understanding prior to performing the examinations. NHS FASP regard in their literature, that all health professionals should support women in the decision making process when they are considering fetal anomaly screening, however, as shown by this study data, the doctors appear to regard the role as designated to the midwifery staff and not something that they should be involved in.

> *" Unfortunately we, I don't get to council each and every woman. They get counselled by midwives and there is no standardisation with that" (I2:p6)*

5.2.2 Working within a 'care pathway' framework

'Pathways of Care' is the generic name used by Johnson (1997) in her writings in *Pathways of Care* to cover all the different applications of pathways such as: Integrated Care Pathways (ICPs), Critical Pathways, Care Protocols, Multidisciplinary Pathways of Care (MPCs) and Care Maps that formalise evidence-based protocols and guidelines into direct, individual women-focused care. The emphasis is on the pregnant woman being at the centre of the process rather than meeting the needs of the service providers.

In the UK, rather than emphasizing the aim of controlling costs, a care pathway is seen as a tool to implement clinical governance that can improve the quality of care, streamline the care given, and ensure that clinical care is based on the latest evidence and research. One such area of improvement, highlighted by Bigrigg and Read (1991) has occurred in the area of early pregnancy assessment for women with complications in early pregnancy. They demonstrated that by implementing a care pathway within the workings of an Early Pregnancy Assessment Unit (EPAU), a walk- in unit often manned by a small team of health professionals, for women

with early pregnancy symptoms of a threatened miscarriage or ectopic pregnancy could make greater financial savings.

The National Pathway Association (NPA) supports the development of care pathways and covers England, Wales and Northern Ireland. It provides a knowledgeable resource with expertise on the implementation, development, education and strategic development of care pathways. It has defined a care pathway as:

> *Determining locally agreed, multidisciplinary practice based on guidelines and evidence where available, for a specific patient/client group. It forms all or part of the clinical record, documents the care given and facilitates the evaluation of outcomes for continuous quality improvement. (Riley 1998, pg. 30)*

As a tool, the antenatal pathway has facilitated continuous improvements in the quality of care for pregnant women. They have provided a mechanism for reviewing the processes, practices and outcomes of care delivery, leading on to the improvement and upgrading of such processes and practices, resulting in better outcomes and higher quality of care. As Pearson (1987) states, clinical outcomes are important in health care, as the NHS has an obligation to ensure that the care it is delivering provides for good outcomes for the patient, which reflects the quality of care that service is providing.

There has been a growth in the development of *clinical guidelines* prompted by the need to improve the quality of health care and to keep a tight grip on escalating costs. The implementation of a *pathway of care* encompasses some of the core components of professional and service development which form part of the comprehensive approach to providing high quality healthcare services and clinical governance and has met the challenges, referred to in the literature review, of decreasing admissions and providing a positive influence on financial factors (O'Rourke and Wood 2009). However the introduction of a clinical pathway

in early pregnancy has, according to the doctors in this current study, created an environment where doctors have little need to discuss the role of ultrasound during the patient-doctor contact and as this has become routine practice, doctors now consider, as in the case of midwives, discussing fetal anomaly screening, the role of offering ultrasound scans, when attending with problems in early pregnancy, belongs to other health professionals, involved in providing the initial care for the women.

> *"It is all pretty much run-of-the-mill so I don't think while I certainly don't take time to explain why they are having a scan or what we are looking for as I say, a lot of it is actually taken away from you as a medic I feel that nursing staff say "sign the card" or "she needs a scan" "fill in this form and hand it in" It just happens without us having much communication with the woman and this happens in both antenatal clinic and early pregnancy clinics" (I5:p22)*

If doctors consider this is not part of their role then they are unlikely to seek the information about the tests that they are not expected to discuss. The implications of the findings of ultrasound and other tests offered in early pregnancy are still seen by doctors as important aspects of their training, but as explained earlier, junior doctors in this current study say they are not taught about ultrasound's limitations and speak honestly about not seeking further knowledge regarding this aspect of the examination unless they are participating in the intermediate level of ultrasound training:

> *I am training for my part two exam so I am reading a lot like the college guidelines about early pregnancy (I4, p14)*

It is only if they require this level of ultrasound training that they begin to understand the complexity of ultrasound practice and become able to appreciate the high expectations women and their families place on the examinations. The problem here is that many of the doctors caring for women in the pathways, do not require to reach to this level of training and so most of the junior doctors have little knowledge and experience on the capabilities and limitations of the examinations that most women opt for. Health professionals, including doctors, have different roles within the care pathways and the role of offering fetal ultrasound screening generally lies initially with the midwives with the ultrasound practitioners then seeking women's understanding prior to performing the examinations. NHS FASP guidelines (appendix 2, p 239) suggest that all health professionals should support women in the decision making process when they are considering fetal anomaly screening, however, as shown by this study data, the doctors appear to regard the role as designated to the midwifery staff and not something that they should be involved in.

> *" Unfortunately we, I don't get to counsel each and every woman. They get counselled by midwives and there is no standardisation with that" (I2:p6)*

The question arises whether, by doctors working closer with the other professional groups in the role of information sharing, this would help women feel better prepared for the examinations because they will have had more of a chance to discuss their options? In the case of pathways of care in obstetrics, the organisations involved are the government (NHS FASP) and medical bodies (RCOG) set up to standardise maternity care. It is with these groups that the joining up of the individual units of knowledge creation and knowledge dissemination and how that articulates, which is where you have control. Who speaks to the women, when there is a need and what they have to say, these issues dominate the way the

process is being controlled. The problem, when women come for an ultrasound scan, relates to Foucault's thoughts that subjects, i.e. people, are controlled or preconditioned to want the ultrasound scans in order to realise their desire to see their baby and this need demonstrates that they are conditioned into thinking that the scan, particularly the screening test at 20 weeks gestation it is a necessary part of pregnancy i.e. it makes the visible from the invisible. They believe through conditioning (self -surveillance), that it is an essential part of having a baby (Foucault 1985). The simple statement, depicted earlier, in the doctors induction programme handbook, (appendix 20, p 361), creates the impression that the fetal anomaly screening scan (20 week scan) is routine and standard antenatal practice and that ultrasound screening fits within the regimental antenatal care pathway followed by health professionals. Foucault's idea on the 'clinical gaze' relates here as doctors' authority depends on the current organisation of knowledge and by the way that the knowledge is being organised via a chain of command incorporated in the set pathway of care and this is not without implications for the way the women, as patient's, are being constructed as objects of study (Foucault 1976). Essentially, in this instance, women are somewhat alienated from the process of informed decision making, which is designed principally to empower them. Instead it sets up another power construction, which is more managerial than clinical and power appears to be not in the hands of the professionals working directly in the pathways of care, but in those who ultimately decide how the pathways are formed, namely the government bodies working with the medical profession.

5.2.3 The idea of 'risk'

From the 1960s onward the population began to take good health for granted and this led to a general shift in attitudes in which medicine was perceived as a commodity: the Consumerist phase (Pickstone and Cooter 2000). It also incorporates Foucault's writings around self-surveillance (Foucault 1985), which are reflected in maternity services from the 1970s, when

women began to challenge the production-line childbirth of large institutionalised maternity units. Over the following decades the focus became on risk reduction and consumers became openly dissatisfied with the medical approach. This was reflected in government reports such as Changing Childbirth (DHSS 1993), which acknowledged that women should have more 'choice, continuity and control'. Increasingly, the emphasis in health care has been on individuals' "right to know" about risks to health and about the possibilities for prevention, care, treatment, etc., and the "right to choose" among the available (i.e., predetermined) options. The idea of risk and measures of risk, when referring to the mid pregnancy 20 week scan, is not included in the induction handbook for new doctors and is an important point to consider, as the probability of delivering a child without major birth defects in low-risk prenatal women is 97% to 98%. Data from The Routine Antenatal Diagnostic Imaging Ultrasound Study (RADIUS) (1993) indicated that the sensitivity of prenatal ultrasound for detecting a fetus with a major anomaly before delivery is 35%. Extrapolating this to low-risk pregnancies, the reassurance provided by a normal ultrasound examination increases the likelihood of a normal outcome (defined as delivering a fetus without a major birth defect) by less than 1%. Two of the main factors that affect the pick up rate for identifying abnormalities are the level of expertise of the operator performing the screening and the creation of a good quality image. In the case of increased maternal obesity, the problem arises because adipose tissue can significantly attenuate the ultrasound signal by absorption of the associated energy. Therefore a high frequency, higher resolution signal would be more significantly absorbed at a lesser depth, necessitating sacrifice of image quality for depth of field. It is therefore possible that some women and uninformed professionals might overestimate the value of ultrasound scanning for purposes of maternal reassurance in low-risk pregnancies. In an American retrospective cross-sectional study, Hendler et al. (2004) examined the rate of suboptimal ultrasonography visualisation in 11 019 pregnancies, of which 38.6% were obese (BMI >30). This indicated that

there was a 49.8% increase in the rate of suboptimal visualization (SUV) of fetal cardiac anomalies and a 31% increase in SUV of cranio spinal structures in obese women. Can this be considered as providing reassurance or is it presumed as reassuring because women and maybe some junior doctors, as this current study shows, do not have the facts to think otherwise? Our understanding of risk can be situated within the field of Foucauldian studies on governmentality (Foucault 1991) that try to make sense of new techniques and practices of power articulated to the crisis of the 'welfare state' (Castel 1991; Dean 1999, Ewald 1991; Rose 1999). 'Marking a major difference in relation to welfare state practices, in which risk entailed a collectivization of suffering through insurance practices, we witness today an 'unpooling' of risk' (Ericson, Barry and Doyle 2000 p.534). Thanks to statistical profile techniques developed by the insurance industry, marketing practices, epidemiology and genetics, each person's future becomes increasingly individualised and dependent on one's past and present behavior. As our strategy to approach this shift of responsibility privileges the health related care of the self, attention is cast upon the social concern with lifestyle. Although loose, 'lifestyle' is a very interesting category. In common-sense terms it signifies consumer 'choice', but a choice that may be both influenced by advertising techniques and by epidemiological recommendations. The risk theories are based on the understanding that populations in communities and as individuals require to be measured, managed, and protected to maximise productivity, wealth, health and welfare (Foucault 1991). Risk can be considered in two ways: firstly, absolute risk, or how we collect and analyse maternity outcome data and the importance that this has in the way maternity services are managed – the population versus individual debate which was one of the main drivers behind the move from home to hospital birth in the mid-twentieth century (Kalof et al. 2008). The second area of importance to maternity services is the cultural influences, or the way risk is perceived. Culture affects what is a socially acceptable or tolerable risk. Tolerable risk is defined as 'a willingness

to live with a risk to secure certain benefits and in the confidence that it is being properly controlled'; or as 'new hazards should not impose a greater risk than these already tolerated by society/ institution/ individual' (The Royal Society 1992 p. 92–93). In practice, this emphasis on absolute risk and the use of outcome measures has meant that many women have had normal births in unnecessary high-risk maternity units (Downe 2004). Downe argued that social and environmental (cultural) matters such as intuition, experience, environmental impact and social factors were also important but often dis-regarded. The concern is that concentration on population statistics to determine individual outcomes can be misleading and lead to increased intervention/ medicalisation of childbirth in which doctors rely on the support of technology such as ultrasound testing and monitoring. This reliance on ultrasound is the third theme that arose undertaking the study on the medical perspective on ultrasound use.

5.3 Doctors' ideas on the concept of ultrasound imaging (third theme from the data analysis)

The study has revealed, that whilst all the doctors adhere to the strict antenatal care pathways, they have a high regard for ultrasound imaging, placing great value in its application, even though many of them have no real knowledge or understanding about its capabilities and more importantly, its limitations. The data from this study has demonstrated the importance that doctors place on obstetric ultrasound in antenatal care. It has revealed how the doctors value the technique as a tool to reassure the women. The development of human life has always been a fascinating area for scientists. The technology of ultrasound is therefore even more significant as it has, for the first time, enabled the medical profession to see the child before it is born, to watch and observe its growth which had always been hidden and which now has become visible and much less mysterious for the medical profession. This, on the other hand, poses the danger that antenatal care no longer emphasises caring but that the focus has

shifted from caring to technical surveillance. Hence women have become the object of medical surveillance. (Foucault 1976). Foucault (Gordon 1980) argues that once individuals internalise the notion that they might be observed at any time and in the case of pregnant women, that their bodies have become 'public property' and are continuously subject to the gaze of 'natal panoticonism' (Terry 1989), individuals often become their own observers and enforcers thereby forming themselves into 'docile subjects'. Docile subjects comply with the demands of the establishment willingly, and thus, power structures remain invisible, until they are overtly challenged (Foucault 1982).

The surveillance is intensified and made more powerful by the use of routine ultrasound examinations as a form of technological gazing. The 1960s brought ultrasound imaging and medicine could now visualise pregnancy. The women themselves learn to experience the fetus revealed to them through chemical reactions and on electronic screens as their child. They are "taught" how to bond with their child through such means. Pregnancy has become operationally verifiable. Women now look at their insides with medical optics that create scientific facts. Today not only the authorities, but also women themselves discover their own child - not through quickening, but by recognizing it as a public fact. Information from the literature review suggests that women's thoughts on ultrasound are generally positive (Proud and Murphy-Black 1995). However it is worth going one step further and trying to analyse why women have a positive attitude. In addition to the feeling of receiving assurance of the babies health, the enthusiasm among women about having an ultrasound scan is explained in their feelings of being closer and more attached to the baby (Baillie and Mason 1997; Rothman 1994). According to Petechsky (1987) one reason why women experience the feeling of bonding positively may be that the image of the fetus that she sees is in fact something that she ought to see, an element of this 'apparatus of control' suggested by Foucault (1982). In this sense meaning is shaped by social myths about bonding and mother-love. Interestingly, one junior

doctor described this phenomenon and as did Campbell and Porter (1997) who made it clear that "the way we think is influenced by our social and material environment". In this context it may therefore be just another form of medical power and dominance (Foucault 1982) and not the woman's 'true' interest, which makes her accepting the technology.

One of the key points on the General Medical Council website (2012) describes the role of the doctor 'is to listen and respond to patient's concerns and preferences'. The doctors, in this current study, stated that it was their duty to reassure and that they would welcome the chance to refer women for more scans as they believe that it would help them calm and reassure women during their pregnancy. This data supports Mitchell's view (2004) that ultrasound is regarded as a source of reassurance rather than a potential source of bad news and is associated with seeing the baby, getting a picture, and parental bonding with the baby. This view is difficult to accept, as ultrasound cannot truly offer assurance of normality. Medicine has become a prisoner of its own success. Having conquered many diseases and provided relief from suffering, is its remit to make people lead healthier lives or rather, is it a service industry, on tap, to fulfil the fantasies its clients may desire? The root of the problem is structural. It is endemic to a system in which an expanding medical establishment is driven to medicalising normal events.

The data from the interviews also described how one senior doctor believes that women only now find reassurance in seeing the fetus moving on the monitor:

> *Basically, when I was young, we used to keep a picture of when we were first born. Now they want to keep a picture from inter utero situation and second thing is that I think there are a lot of demands where women want to be reassured and by listening to the fetal heart by sonic aid is not good enough in the present day when science has given us so much. You can actually see something now and this is amazing to see the fetal heart and see the fetus jumping around, it is amazing (I7:p7)*

A belief that mirrors Duden's (1992) writings but is it the need to 'see' the pregnancy that gives doctors the idea that ultrasound reassures women? Previously, Duden's writing on the historical changes to how pregnancy is acknowledged by the medical world is considered as she recalls the time when women first felt a baby move, termed 'quickening', and how then the women knew they were carrying a child (Duden 1992). Today, once the urine test is positive, a doctor or midwife will palpate and monitor the uterus, and deliver to the woman a report of intrauterine progress as in keeping with the medical model to which doctors are all trained in. What is difficult to distinguish, from the study data, is whether women feel reassured by the ultrasound examination itself, or if they feel reassured because of accepting and having an experience that is accepted as a routine part of antenatal care and as a result they are self surveying or controlling. Doctors require ultrasound to provide the reassurance that they feel they have a duty to provide. Any ultrasound examination that provides women with the opportunity to "see" their unborn child conforms to the requisite regardless of the nature of the examination undertaken therefore, doctors will be disinclined to deter women from opting for the scans and losing this opportunity to feel reassured.

Another question that could also not be truly answered related to who really is reassured by the ultrasound examination, women or the doctors themselves. As one doctor explained, they look for reassurance from ultrasound scans

> *"Many would take repeated scans as a way of reassuring themselves that everything is all right as essentially it is because we use them for that as well" (I1:p4)*

Stephens et al. (2000) and Gudex et al. (2006), referred to in chapter two, inferred that women categorised as 'low risk' in pregnancy had specific reasons for wanting prenatal ultrasound and that many of the reasons women gave were outside the realm of traditional medical decision making and did not conform to clinical reasons that doctors and other health professionals consider. The information that women seek may not help the physician clinically manage the pregnancy; women often want different information than their physicians need. Stephens et al (2000) described how more than one third of their women wanted a prenatal ultrasound examination for reasons generally associated with maternal reassurance.

5.3.1 Reassurance through the act of 'seeing'

Georges (1996) describes the position of women being brought up in an interpersonal world dominated so thoroughly by visual media such as television and home videos and feels it is not surprising that the visual aspects of ultrasound provides women with a sense of reality about their pregnancies. The advance of science through technological development plays a large part .The 'technology push ' introduced in the literature review (p 62) suggests that the innovation process starts with an idea or a discovery, sometimes this is by a creative individual who has the knowledge and imagination to realise its significance and the practical skills to transform the idea or discovery into an invention. In the second half of the 1990's at least twenty scientific centres were embarking on distinctive laboratory and clinical research into 3-D ultrasound. Many of the innovations relied heavily on software programming. 3-D ultrasound technology would not have been a viable commercial proposition if not for the fact that computer technology was in the mid to late 1990s at a stage where the computations could have been done with staggering speed and at an acceptable cost. What are known as 'reassurance scans' and the perhaps, misnamed 'entertainment scans' started to develop. The attraction of being able to look at the face of your baby before birth was enthusiastically

reported in lay parenting and health magazines. Manufacturers had adopted an unprecedented "profit marketing" strategy, a process perpetuated by medical practice, to advertise to providers and "reverse marketing" strategy to advertise to consumers, particularly after the arrival of the 4-D (dynamic or motion 3-D) machines. Also, when combined with the authoritative voice of the ultrasound practitioners, during the visualisation on the ultrasound monitor, the images themselves give reassurance of the "normality" of pregnancies. Harris et al. (2004), report in their study that "normality" was confirmed and reassurance afforded by the ultrasound practitioner's interpretations of fetal images. Despite questioning the fallibility of scientific evidence about specific indications of abnormalities or the sex of the baby, they concluded that women did not question practice standards, neither did they question the ultrasound practitioners more general interpretations of images. They also concluded that 'Seeing the baby' also reassured some of their women about the changes taking place in their bodies and described how "seeing " gave some women the knowledge that their pregnancy was real. This form of reassurance appears to come from a positivist philosophy of science based on the view that in the social as well as natural sciences data derived from sensory experiences, and logical and mathematical treatments of such data, are together the exclusive source of all authentic knowledge. Obtaining and "verifying" data that can be received from the senses is known as empirical evidence (Marxists Internet Archive 2012). Society operates according to laws like the physical world. Introspective and intuitional attempts to gain knowledge are rejected. Positivism asserts that the only authentic knowledge women may now accept is that which allows positive verification through the 'seeing' or gazing of their baby on the ultrasound screen. Foucault (1976) argued that in less than half a century, the way in which disease was conceptualized shifted radically. The classical concept of disease was as an entity that existed independently of its physical manifestation in particular anatomical symptoms, in a particular individual's body. The modern model-the one with which we are still familiar today- relies on the

examination of a given body to reveal the nature and severity of the relevant disease activity. By this, Foucault has introduced the idea that medicine shifted its focus to one of constant visibility (Foucault 1976). Foucault stated that this reorganisation is involved closely with questions of power relations. The doctor's gaze is not faithful to truth, or subject to it, without asserting at the same time, a supreme mastery: the gaze that sees a gaze that dominates (Foucault 1976, p 39). This medical gaze perpetuates the domination of medicine over women in antenatal care whilst women accept ultrasound scanning for what they consider as a pleasurable experience.

The findings from this study have shown that even though the doctors are not actively involved in providing unbiased information to women about the use of obstetric ultrasound imaging, by the perception their professional standing has, will have a biasing effect on women making informed decisions when choosing ultrasound imaging. The next chapter discusses the outcome from undertaking this study and considers what changes may be made to the hospital practice in order to attempt to support women better in taking informed decisions about opting for routine ultrasound imaging in their pregnancy.

Conclusion

From the discussion on the three main themes that make up the doctors' perspective on obstetric ultrasound, it has emerged that the question of whether doctors are actively involved in the process of information sharing about ultrasound imaging is a complex one because, on the one hand it is easy to see that they are not actively involved in discussing ultrasound imaging and screening prior to the women making a decision on whether to opt for the scans, but on the other hand, by the sheer nature and position their profession holds within the medical care system, they have an involuntary power or stance that may already bias women's decision to opt for ultrasound examinations when they are offered them.

Summary of Chapter Five-Discussion on the three themes

Theme one-Doctors' knowledge and understanding of obstetric ultrasound
There is a variation in the amount of information different doctors know about obstetric ultrasound.

Doctors' training on obstetric ultrasound is predominantly based on how to perform an examination and the application of the diagnostic results.

Junior doctors in the current study have no training in ultrasound's capabilities and limitations.

No information regarding fetal anomaly screening (20 week scan) in the doctors' induction pack

Doctors derive their perception of obstetric ultrasound from a combination of a small amount of factual information and their encounters with personal experiences of pregnancy.

There is a need to empower junior doctors with facts and counselling skills to improve provision of information over fetal anomaly screening and the limitations of ultrasound scanning.

Theme two- Doctors' views on the practice of obstetric ultrasound imaging
Doctors see the task of delivering information as part of other professionals' roles and the implementation of care pathways may have created difficulties in training requirements for new doctors.

Mandatory induction programme only deals with practical issues of obstetric ultrasound and care pathways.

Women may not be aware that not all doctors are knowledgeable about ultrasound imaging.

How language is used is important in communicating information.

Government bodies and agencies expect all health professionals to be involved in information sharing.

No area identified in the current study where doctors obtain education in the psychological and social aspects of ultrasound imaging.

Effective training and inter-professional collaboration may provide improvement in working practice.

Theme three-Doctors' views on the concept of obstetric ultrasound
Doctors value obstetric ultrasound as a tool for reassuring women in pregnancy.

Doctors and women regard ultrasound as a source of reassurance rather than a potential source of bad news.

Many of the reasons women cite for wanting ultrasound are outside the realm of traditional medical decision-making.

Pregnancy has become operationally verifiable. Women now look at their insides with medical optics that create scientific facts.

Doctors believe women now need more reassurance than just by feeling the baby moving.

Chapter Six- Changing Working Practice

Introduction

From the data it has emerged that the answer to whether doctors play an active role in information sharing with women about the ultrasound scans offered is a complex one as what has emerged from the study is that there are two aspects relating to how doctors may influence women in decision- making. Firstly, by the voluntary act of communicating information with prospective parents, discussed in section 6.1 and secondly, involuntarily, by their professional position that they hold in society, discussed in section 6.2. This chapter concludes with a review of the research question recommending two areas for change: namely, **development of the doctors' induction process to include information about obstetric ultrasound imaging;** and **strengthening inter-professional collaboration on information sharing** in order to improve working practices within the clinical care pathways and which may improve the support offered to women seeking antenatal ultrasound imaging. However, this chapter concludes with the point that, these recommendations may not influence how well women take informed decisions over choosing fetal ultrasound imaging as discussed in the previous chapter, other (involuntary) factors may act on their ability to make a truly individual informed decision.

6.1 Voluntary influence- what doctors say and how they say it

As early as 1995, Smith and Marteau suggested that knowledge of fetal anomaly screening was particularly poor amongst health professionals in comparison with their knowledge of maternal serum screening for calculating the risk of a pregnancy being affected by Down's syndrome. They also thought that the professionals lacked the communication skills necessary

to provide such information. They believed at the time that the limited knowledge of the women might well have reflected the fact that those responsible for counselling lacked the knowledge relation to screening tests. They found that health professionals rarely received any formal training in relation to prenatal screening tests. In this study, when questioned about offering ultrasound to women, one senior doctor reported that junior doctors would not be equipped with enough knowledge to counsel women properly for ultrasound screening:

> *"One off training in communication is not good enough for them to be a natural communicator and we are picking up a lot of these cases, where they have been misinformed or informed in a way that has been misconstrued" (I7, P11)*

This doctor believed also that health professionals have also failed to provide the adequate information regarding the scan because they viewed the test very positively. Indeed, it is a physically non- invasive procedure involving little or no discomfort, and Smith and Marteau (1995) pointed out that it is considered to be a positive psychological experience for pregnant women. There is also the fact that the scan does provide doctors with useful information about the growth rate of the fetus which contributes to their monitoring of safe progress of the pregnancy. They consider that for these reasons health professionals may not perceive the ultrasound scan purely as a test which screens for fetal abnormality, and may therefore be reluctant to give women information, which might discourage uptake of the procedure. This current study, over fifteen years later, demonstrates some similarities between this study of doctors' perception of ultrasound screening and the findings made by Smith and Marteau (1995) as they suggest that the responsibility of ensuring that misconceptions regarding screening do not occur rest with the health professionals. A study by Proud et al. (1995) found a correlation with Smith and Marteau's (1995) work, suggesting that it was then possible that women were being denied the opportunity to make informed decisions because the health professionals were failing to relay the necessary information to facilitate such decisions. This

current study suggests that health professionals working in this antenatal clinic are not optimising the women's opportunity to make informed decisions as not all the health professionals women have contact with are able to offer supporting information in which they can make an informed decision. What is needed is some defined training for junior medical staff that incorporates an awareness of the purpose of ultrasound imaging in relation to the different ultrasound scans offered. There is no suggestion here that junior doctors should be trained to counsel women for fetal ultrasound screening but that they should be given the opportunity to consider the issue of women's needs to make informed choices and have the right information to hand and to be able to discuss with other professionals, the complexity that surrounds this area of ultrasound imaging. This current study confirmed that some junior doctors wish to have this information and by providing the arena for them to debate the issue of fetal screening this will help in allowing doctors to understand the capabilities and limitations of ultrasound examinations, that appear to be highly regarded by them as a means to delivering the best care they can to women.

6.1.1 How professionals offer information on ultrasound scanning

Although within the routine clinical pathway the nursing and medical roles are quite different it is acknowledged that it is the responsibility of all professionals to provide women with information about their care. The cultural changes needed for multi disciplinary, team based healthcare cannot be learnt from sitting passively in a lecture. There is the requirement to experience learning through interaction with others who will make up that new culture. In a report in 2008, the Maternity and the Newborn Clinical Pathway Group for NHS Yorkshire and Humber recommended that staff should be trained and regularly assessed for competence in customer care. They consider that timely, consistent information should be available to prospective parents within the roles of the various healthcare professionals and clear

explanations of what to expect from services and to help them make informed choices. The need to check women's understanding of issues in pregnancy is vital. Throughout this discussion it has been shown that the junior doctors have very little knowledge of ultrasound imaging capabilities and limitations and it is arguable that the application of clinical pathways may well be a factor that has created little need for discussion with women and perhaps it can be argued that it is not knowledge that is considered important for them to know. The communicating aspects relating to ultrasound examinations are fulfilled by the nursing staff, leaving the clinical role of diagnosing to the doctors, but this is at odds with the statement made by Campbell et al. (1998) on the benefits of applying a clinical pathway as they state that it improves doctor-patient communication and patient satisfaction. This current study has highlighted a weakness of implementing a clinical care pathway; a risk of less individualised care for one-policy fits all approach.

6.1.2 How professionals might support women in making 'informed choices'

An informed decision is one where 'a reasoned choice is made by a reasonable individual using relevant information about the advantages and disadvantages of all the possible courses of action, in accord with the individual's beliefs'. A report of the expert maternity group (DOH 1993) produced the document, *Changing Childbirth* that acted as a catalyst for promoting a partnership between health professionals and women when making decisions about individual clinical care. There has been further work undertaken by the UK NSC (2011) to improve information for supporting women in making an informed choice with regard to fetal anomaly screening, but it is unclear how much training doctors receive in delivering this support to women. Doctors interviewed, did consider the role of counselling women for ultrasound screening to be the priority of midwives. As seen earlier, the application of a clinical pathway

for routine antenatal care has created defined roles for a variety of professionals supporting women in pregnancy. This current study data suggests that doctors do not see information sharing as part of their role and it is not part of the assessment in their mandatory training programme. If doctors are not taught about ultrasound limitations at medical school or as a junior doctor in training and they receive no information or guidance through the induction programme, they may never have any educational training in order to provide women with the support they need to understand fetal ultrasound imaging; a role considered as being the responsibility of all heath professionals involved in providing antenatal care (UK NSC and NHS FASP 2008). Giving information about antenatal testing is an area in which qualitative research has highlighted women's criticisms of carers' communication skills (Al- Jader et al. 2000) The single small trial by Smith et al. (1995) of giving midwives and doctors communication skills training, suggests that this may help to improve the transfer of antenatal test information from professionals to women. The fact that some doctors in the current study, who had contact with women in routine antenatal consultations, presumed that the fetal anomaly scan (20 week scan) was a standard part of antenatal care may well have an affect on what women believe are the reasons behind the tests being offered and this may conflict with the message that midwives are trying to convey. This is one area of patient-doctor communication that needs consideration in order to improve the standardisation of information provided. Communication in health care, particularly between healthcare professionals and patients, has attracted an increased amount of attention at official and professional levels in recent years. The Department of Health, the Royal Colleges (Royal College of obstetrics and Gynaecology, and Royal College of Midwives) in their report of the audit on communication standards in obstetrics (1995) and the Royal College of Physicians of London (1997), reporting on improving communication between doctors and patients, have all been involved in initiatives to promote good communication. More training in communication initiatives have been offered across all

professions in the NHS (Department of Health, the NHS plan, a plan for investment, a plan for reform) and in 2000 responded to increasing evidence from researchers claiming that the quality of the interaction between patients and carers may have a significant effect on a variety of aspects of patient well-being (Ong et al. 1995) that included patient's satisfaction and their knowledge and understanding. Maternity care is an area of health care in which the importance of good communication has received particular attention. A report from a forum for Maternity and the Newborn (Aston and Lee 1994) discussed the need for good communication and the requirement for improvements in communications and dialogue to enhance women's understanding of and full participation in all aspects of care in pregnancy in order to enable them to make informed choices. NHS FASP guidelines (appendix 2, p 239) state that it is the health professional's responsibility to inform women about screening tests and the wording implies that all members of the professional bodies; midwives, ultrasound practitioners and doctors should work towards improvement in this area of care. We may wish to presume that such guidelines are aimed at professionals working as a team. Cohen and Bailey (1997) described a team as a group of individuals who are interdependent in their roles, will share responsibility for outcomes, who see themselves and who are seen by others as an intact social entity embedded in larger social systems, and who manage their relationships across organisational boundaries. Two parts of this description are worthy of consideration with respect to working collaboratively to inform women about ultrasound use. The first issue relates to sharing responsibility for outcomes. This current study has identified that the doctors place the responsibility of discussing the use of ultrasound scans and consenting women for ultrasound screening, with other professionals. Neither through any training or inter-professional support, do doctors gain any skills in this area. They state that it is not something that they routinely incorporate into their discussions with women, or with their colleagues in their weekly meetings. The second part of Cohen and Bailey's idea of a team is '*who manage*

their relationships across organisational boundaries', Pinki et al. (2007) discovered when they looked at the working relationships with midwives and junior doctors, that there was a high level of dissatisfaction among medical trainees, with over half of them reporting that there was a problem in professional communication. Junior doctors, in the study by Pinki et al. (2007), felt that their decisions were pre-empted because the midwives had already given a management plan to the women before the doctors had seen the women and when asked only 32% of the trainee doctors wished to involve midwives in their professional assessments. The results of their survey suggest that there is a level of dissatisfaction among trainee doctors with regard to professional and working relationships with midwives. Their study showed a weakness in their hospital setting in working between the two professional groups. It is important to remember although their study has provided an insight into the lack of collaboration between junior doctors and midwives, it only evaluated the trainee doctors' perspective and without considering the views of the midwives it is difficult to relate how weak this relationship is. However, whilst policy initiatives increasingly promote multidisciplinary teamwork and collaboration, they can underestimate the difficulty of implementing change in practice, especially in an environment of financial stringencies, increased cultural diversity, staff shortages and increased birth numbers. Wood and Gray (1991) claim that any effective definition of collaboration must consider the following questions: "Who is doing what, with what means, towards what ends?" Downe et al. (2010) describe the idea of collaboration as a *"dynamic and active process between people that is generally directed towards doing and achieving something."* In terms of improving women's knowledge and supporting them in making both informed decisions with regard to opting or declining ultrasound imaging and understanding the limitations of ultrasound scans, it would be beneficial to develop a "model of effectiveness" (Liemieux-Charles et al. 2006) that is tailored to the health professionals involved in the antenatal care pathway. Work on the idea of developing a 'model of

effectiveness' through further research in this area is one of the recommendations from this study, in the continuation for improving working practice. An example of such a model is found in appendix 21, p 366.

6.1.3 How professionals might communicate

This leads to us to consider what constitutes effective communication of information. The language a doctor uses in dialogue may also sway women's decision-making, as suggested in chapter two, by McCourt (2006). Entwistle et al. (2008) identified two main rhetorical patterns in the use of language, **'routine as choice'** and **'choice as routine**, when in her study; the midwives discussed ultrasound screening with women, thus implying that what is routine is the normal and therefore right choice. The data from the interviews with the doctors demonstrated that, some doctors in training think similarly when considering ultrasound screening at 20 weeks. They do not consider that 'choice is routine' and the subtle difference may also be a reason why they are not knowledgeable or seek out knowledge about ultrasound screening. Not all of the doctors interviewed were aware that women need to make a choice and so they may not understand the need for consent during a consultation. As Entwistle et al. (2008) describe, they apply commonly used terms during their communication such as 'you will have or then you have', a common sign of the application of a medical model approach to care.

Clear and readily available information is important to women, but that women also highlighted the importance of staff listening to them and responding to their individual needs (Garcia et al. 1998) reviews of doctor-patient communication confirm that communication involves much more than giving or receiving information. A trial by Smith et al. (1995) evaluated two interventions on training obstetricians and midwives to present screening tests. The numbers in the trial were small partly due to a high proportion of dropouts and the outcomes tested were limited, but the results indicated improved information sharing about antenatal tests and

improved knowledge compared with the control group who had not had any extra training. A qualitative study running alongside a trial of MIDIRS information choice leaflets involving increased observation of clinical practice, interviewing with women and professionals and focus groups with women, suggested a number of reasons why the leaflets were not effective (Kirkham and Stapleton 2001). The researchers noted that power differentials between women and the professionals that care for them often resulted in women's compliance with the right choice reflecting normative patterns of care. Al-Jadar et al. (2000) suggested that without detailed information and the opportunity to discuss screening women often accept tests as routine rather than making informed choices. As discussed, doctors referred to the ultrasound scan at 20 weeks as part of the routine or standard antenatal practice, without any referral to the nature of the scan being offered as a screening test, thus supporting Al-Jadar et al. (2000) making the point that if the doctors do not make clear the reasons behind offering the scan then women will accept the test as standard care. This current study has demonstrated that more support is required through training for doctors in order to improve communication within the antenatal care pathways, between women and those that care for them. The challenge is to integrate it with skills and attitudes. Downe et al. (2010) stated that to date there has been very little discussion about the nature of collaboration of the efficacy of various collaborative models and consider the fact that there are very few studies which have sought to consider the subject of inter professional relations within a maternity setting. Of those studies most have tended to support the view that there are fundamental clinical and professional differences between midwives and physicians with regard to maternity care. They reviewed a large study considering midwives and physicians relationships with respect to the care of labouring women and the use of routine fetal monitoring. The study revealed that nurses and physicians shared the common goal of a healthy mother and baby but did not always agree on methods to

achieve this, with professionals adopting different approaches such as a social or medical model when considering care.

By the work undertaken by NHS FASP and UK NSC women now receive information and can access online details about fetal ultrasound screening, offering a validated format for presenting facts that surpasses conventional advice in terms of balance, accuracy, and consistency (UK NSC 2012). They also offer a medium for expanding counseling beyond the time constraints of busy hospital visits. Women can study decision aids at their leisure, contemplate their preferences, and return for another appointment for further discussion. However, at the heart of the study's findings there is the problem that women in this hospital setting are not routinely offered a second appointment to discuss their options on fetal anomaly screening, and that the only time available is during the antenatal appointment occurring directly after the dating scan. If this is the only opportunity women can discuss their thoughts, then what is spoken and how it is introduced may impact greatly on their decision-making. The use of language in discussing screening options is extremely important in offering the test in an unbiased and non-pressured way. A study my McCourt (2006), highlighted in chapter two, focussed on patterns of communication between midwives and pregnant women and their implications for information, choice and control. A continuum of styles of communication was identified with the prevalent styles also differing according to location and organisation of care. The caseload interviews showed more overlapping, conforming more to the patterns of ordinary conversation rather than the more formal ordering characteristic of much institutional talk (Silverman 1987 & Silverman 1997). In certain contexts, and particularly in women's talk, this was considered to be a co-operative form where participants in a conversation helped to put a story together Gluck and Patai (1991). This was particularly evident in interviews where the midwife had provided care to that woman before so that the business of the interview was partly about re-establishing a pre-existing relationship and narrative. McCourt (2006) also

found that at times midwives would join in with a woman's speech, speaking the words with her, as a means of signalling understanding, or echoing her words to signal empathy or sympathy. This latter form was used more when women talked about problems, worries or in the few instances where they had a complaint to make. In community clinic visits, by contrast, interruption appeared to reflect a task-centred approach and failure to listen and respond to the other speaker since the tone was quite different. The hospital-based midwife, although usually female and in a female-gendered role, acted in the interview as representative of the corporate body of the health service. Within the routine antenatal pathway set up in this hospital study women would be seen initially by the community midwife and in McCourt's (2006) findings, the communication style may take the form of 'professional style' whilst indication from the doctors' perspective may lend their communication style more to the 'disciplinary' style. According to McCourt's findings (p 58), conversations involving information sharing about informed decision making should follow a 'partnership' style, characterised by listening and turn taking in a conversational manner, rather than a ceremonial order, interjection but not interruption, echoing and mirroring of language, posture and movement. Within this model, there may be room for implementing Entwistle et al. (2008) alternative way to communicate screening information; by following the process of 'consider an offer' proposal, discussed earlier. Doctors could be provided with a summary of the potential benefits and harms of the ultrasound tests, consideration of any known objections to it, information about the tests providers, and factors that might affect the appropriateness of the test for particular individuals. In this way doctors engaging in communication with women about the nature of the ultrasound test, may make women feel surer of its usefulness and feel more prepared when they attend for the examination. However, as explained earlier, this engaging in conversation by the doctors with women is only to re establish the facts about ultrasound's capabilities and limitations, it is not a suggestion that doctors should play the major role in counselling women.

6.2 Involuntary influence from doctors' professional position

Ultrasound's association with pleasure and reassurance is perpetuated when there is no discussion between a woman and her practitioner about the pros and cons of this examination. As indicated, by this study and a study by Skirton and Barr (2010) those offering screening and those to whom it has been recently offered misunderstand the purposes of the screening tests. Medicine is a profession where it is assumed doctors know everything and everyone can be treated (Porter 1997). The "encounter" depicted in the introduction to this study, p15, described a case where a woman attended for fetal ultrasound screening feeling "unprepared" for the possibility of detecting a fetal abnormality. Women are not alerted to the potential ramifications of having ultrasound when they are asked if they want to book a scan or when doctors say, "It will show how the baby is doing." Arguably, as depicted in the literature review, many women undergo ultrasound because it is so much a part of prenatal care through the instigation of care pathways that it has become a test that does not require a decision. Nicol (2007) evaluated the external pressures that influence the process of informed choice made by first-time expectant mothers and described the impossibility for women to make informed choices about accepting ultrasound examinations due to the influences of hospital and social cultures. As soon as an expectant mother enters the hospital environment she categorises and stereotypes certain health professionals. Doctors are typically classed as leaders, having typical male characteristics of being expertly knowledgeable, and dominate. In contrast, nurses or midwives typically are seen as caring and emotional, which are both female characteristics. The categorisation of ultrasound practitioners is dichotomous because some of their prototypes fit into male and some into female categorisation. Technology and expertise are male prototypes, whereas it is commonly women who are ultrasound practitioners who perform the obstetric scans. This has the potential to create subconscious dilemmas and possible conflict. The concept of *governmentality* (Foucault 1991) also plays a part here, in the idea that because

ultrasound is a part of the routine care pathway it is contributing to the practice of self-governing and self- controlling.

A major underlying issue, which is clearly articulated in health promotion literature and policy documents, is that individuals have a right to know about their unborn child's health. Access to such knowledge is seen as integral to the promotion of individual autonomy (Petersen 1998). Genetic screening allows genetic counsellors to calculate the individual's or couple's genetic risk, which then presents certain options for individual action. In prenatal diagnosis, such information is viewed increasingly as crucial to prospective parents' informed prenatal decision-making. According to genetic counsellors' statements about genetic counselling practice articulated in the professional literature, genetic information should be given in a nondirective manner allowing individuals to come to their own informed decisions. Non-directiveness implies self-determination; an ability to make decisions unencumbered by constraints of context, social location, and the power relations between the counsellors and counselled. Despite many counsellors' recognition of the limits of non-directiveness, in practice non-directiveness continues to be promoted by the counselling profession as an ideal, thus reinforcing the view that the counsellor is ethically neutral and that the counselee is an ethically autonomous, rational, self-directed actor (Petersen 1999). Davis-Floyd (1994) believes that women express a positive view of ultrasound and feel empowered by any reproductive technology because they are a part of the society's core value system. The point that remains unarticulated in is that new technologies of genetic screening and related health practices, such as fetal anomaly screening, compel individuals to become more active decision-makers and by the very act of medical professionals involving themselves directly in discussing the use of ultrasound may create in women, the idea that ultrasound screening is essential in order to achieve the best antenatal outcome. As the use of new technologies of screening become more readily available in the market and their use more routine in clinical practice a decision not to utilise

such information is seen increasingly as irresponsible, if not reckless, and as transgressing the rights of the unborn. This in turn, influences their way of thinking and therefore makes them believe in the value of technology.

6.2.1 The professionals' role in counselling

As practitioners themselves have come to recognise nondirective counselling is at odds with the broader policy goal of prevention, which is to reduced health care costs associated with treating and caring for illness and disability (Clarke 1991). In the absence of genetic therapies that will allow the correction of the defects in the affected embryo, the only real options available to parents at present are to continue with the pregnancy or to abort. In other words, the development of technologies of prenatal screening creates choices but only within a small, predetermined range of possibilities. This suggestion, that doctors should take part in the counselling of women on their options for fetal ultrasound screening, may sound like an improvement practice but after considering the elements of Foucault's ideas of self surveillance, governmentality and the clinical gaze, the conclusion drawn is that it may not help women feel any more prepared, as it may be difficult for the doctors to act impartially due to their professional philosophical position and that the possible negative impact, through hegemonic gender belief (Nicol 2007), on women making decisions. Providing doctors with the knowledge about ultrasound imaging may alter their level of expectation of the examinations but it is doubtful that this alone could have a positive response to the problem relating to what reasons women accept fetal ultrasound screening as other factors, such as the gender belief theory, may have greater control over their decision process.

6.3 Answering the research question

The motivation to undertake this study came from the repeated problem, experienced in the ultrasound department, of some women feeling unprepared for the ultrasound examinations they opt for during their routine antenatal care. The initial literature review demonstrated that midwives, working with the government body (NHS FASP), have created on going improvements to the practice of information sharing, but that little knowledge was evident in the literature on the medical contribution to this role. This study aimed to explore the doctors' perspective on the use of ultrasound in obstetrics in order to consider they are active agents in the process of unbiased information sharing with women about ultrasound imaging in pregnancy. From the data, the doctors felt that the role of information sharing belonged to the midwifery profession, but the issue here is not specifically about whether it is the midwife or the doctor who provides the initial discussion or information, but it is about the consistency of information giving by a team of professionals and to assume that only midwives are responsible for this role. We also should not assume that because a midwife has provided written information and has introduced the idea of screening to women then the task of supporting women in making an 'informed choice' is complete. The guidelines for seeking consent (appendix 2, p 239) make it clear that women should be given a period of time, after they have received the screening information, before they require to make their decision and the next opportunity, within the antenatal pathway, for women to discuss and decide is at the antenatal consultation. However as previously stated, doctors do not actively broach the subject with prospective parents and some stated that they were not equipped with the knowledge if they were to do so.

6.3.1 Developing doctors' knowledge may not be enough

The case of fetal anomaly screening demonstrates well how the compulsions of choice interact with broader imperatives surrounding life choices and responsible citizenship to reinforce and reward particular practices of the self. However, although the available options for action in health care are often predetermined rather than "invented" by consumers themselves there is nothing inevitable about how individuals may act. Considering the doctors perception of ultrasound use in pregnancy has ultimately revealed that the doctors, with their medical model approach to maternity care, may not be best suited to providing women with the initial introduction and information about choices they need to make on fetal ultrasound screening. Women engage with expertise, taking from encounters what they wish and interpreting information within their own lay frameworks of knowledge according to the perceived relevance of information. In relation to the conveying of risk information, for example, it is well known that there is a frequent mismatch between expert calculations of risk (generally presented in terms of gaming odds) and "lay epidemiology" (see Davison, Smith, & Frankel 1991). Expert recommendations are frequently ignored or contested by subjects when these do not accord with personal goals or sociocultural assumptions and values. The question of whether, by incorporating the doctors more in discussing the role of ultrasound during antenatal visits, women may feel better prepared for their scans is difficult to answer. Foucault's idea on the 'clinical gaze' and 'natal panopticism' (Terry 1989), by the way that the knowledge is being organised via a chain of command through the accepted routine care pathway, somewhat alienates women from the process of informed decision making and sets up a managerial power construction that is in the hands of those who develop the pathway, the government bodies working with the medical profession rather than the professionals who work within it. Therefore, even by involving other health professionals, who are part of the 'establishment', in information sharing with women, this may not in fact alter how women make decisions about

opting for or against ultrasound screening. However, in terms of changing professional practice, this study has highlighted two areas of working practice that require improvement: development of the doctors' induction process to include information about obstetric ultrasound imaging and the need for more inter professional collaboration to provide greater consistency in information sharing with women who's care is undertaken through following the established antenatal care pathways.

6.4 Recommended changes to professional practice

1. **Development of the doctors' induction process to include information about obstetric ultrasound imaging**

In the case of what knowledge junior doctors have concerning the purpose of ultrasound imaging and in particular fetal anomaly screening, data from this current study revealed that some rely on the information they have picked up from their personal or family and friends experiences of pregnancy. This raises the concern that although women believe that doctors are all knowledgeable, the real fact is that some doctors may actually have the same misconceptions and expectations about obstetric ultrasound as the women with whom they are consulting with. Their level of understanding of ultrasound imaging is not related necessarily to the amount of medical experience they have but perhaps more so by their own personal antenatal experiences. Experience does not always relate to gaining factual knowledge and can sometimes only be described as 'exposure to' or having an 'encounter with'. If no formal education about ultrasound's capabilities and limitations occurs within their training, either during medical school or as a junior doctor, to counteract any misconceptions then the case may be that some doctors over time may come to consider their own encounters to be a depiction of true knowledge. When doctors become patients little is known about how they return to the lay world from that of being a doctor. Ordinary women have just one point of view,

but the doctors have two, may be each at times shaping or combining with each other. The doctors have privileged and uncommon knowledge of 'the Other'. Klitzman (2008) described, in his account of when doctors become patients:

> *"That many shuttled back and forth between these dual roles, as if two parts of the brain; and over time, each position affected the other"*
>
> (Klitzman 2008, p.7)

There is a need to increase the knowledge that junior doctors have about the technique, but at present there are no planned training sessions within the junior doctors' workload set aside for learning about ultrasound use. It is generally expected that junior doctors use their time off after working on call, or take annual leave days in order to secure time to undertake their mandatory training in basic and intermediate ultrasound practice. The availability of sessions in the ultrasound department is dependent on both the availability of an experienced ultrasound practitioner and fitting around the demands for ultrasound appointments on the ultrasound service. The ultrasound department, like many other departments in the UK, has experienced long-term recruitment and retention problems surrounding employment of ultrasound practitioners (Hurleston 1996). This has created a limitation on the time ultrasound professionals can spare for training purposes. This reason, however, should not be accepted as an excuse for not working towards improving professional training. The findings from this current study have demonstrated the need for an improvement in teaching and supporting junior doctors in their understanding of the purpose and limitations of obstetric ultrasound and acknowledging that improvement requires collaboration between clinicians, who play a role in educating junior doctors, and other professionals such as ultrasound providers and midwives supporting women in antenatal care. What this study has revealed is not only the problem that junior doctors are often unaware of the true role and capabilities of ultrasound examinations but

more importantly, it has also identified a lack of structured inter professional support in place in order to support all junior doctors in learning about the widely used technique of ultrasound imaging. As gaining basic ultrasound scanning skills is compulsory for all junior doctors, it is perhaps important for those responsible for training junior doctors to also offer some training and discussion sessions that address the emotional and ethical issues relating to ultrasound tests as they are now required to gain some practical skills in ultrasound scanning. It is understood that an important principle of learning is that the learner perceives the subject matter of the teaching session to be relevant to both present and future clinical practice. If the subject matter is not part of everyday activity then the motivation to learn and understand may be considered less important. By nursing staff taking the role as first contact with women in an early pregnancy setting and midwives initial involvement in an antenatal setting, this may well have an influence on how much importance doctors place on learning about aspects of ultrasound in their training and by not having to regularly encounter discussions with women, they may not comprehend the expectation women place on the ultrasound tests themselves. Selection of what is learned is particularly obvious among learners, who are most concerned to acquire knowledge and skills relevant to their everyday work and practice. Bayley (1998) discusses how learners may repeatedly select the topic of interest rather than seek new knowledge and skills that may be valuable in their practice at some stage in the future. Hence there may be a requirement in setting learning objectives for junior doctors to take account of empowering doctors with knowledge and facts to approach the subject of the realities of ultrasound imaging limitations with women when required.

2. Strengthening inter-professional collaboration on information sharing

Teams produce better patient care than single practitioners operating in a fragmented way. Effective teams make the most of the different contributions of individual clinical disciplines in delivering care. As stated earlier, there has been a large body of work undertaken by the UK

NSC and NHS FASP to improve information given to women with regard to decision making in pregnancy, with much of this work considering the midwifery as well as the women's perspective and is accessible to health professionals and prospective parents on the UK FASP website. An earlier study, by Smith et al. (1994) funded by the Medical Research Council, demonstrated that the pattern of women's knowledge reflected the observed emphasis of midwives and obstetricians when routinely informing women about prenatal screening: information about the practical aspects of the test was emphasised, whereas information about the likelihood and implications of possible results was rarely given. These results highlighted then, back in 1994, the extent to which prenatal screening programmes were falling short of the counselling standards (appendix 2, p 239) that had been set. McCourt (2006), in her writings of studies reviewed by Hauser in the early 80's, also noted gaps and inadequacies in information giving and exchange. We might expect this early work to be less relevant today with the impact of improvements to the information available to women and the considerable changes in medical and nursing education. However, McCourt (2006) highlighted the point that similar themes had emerged in her own work on the communication between midwives and women at the antenatal booking visit. To pick up on the work by Smith et al. (1994), they described the work of counselling as a role shared by midwives and the obstetricians, but the current study data depicted a situation where the doctors appeared to play little or no part in the act of supporting women in making decisions about choosing ultrasound screening, again this may be because of the different care models adopted by the different professions. The work by Smith et al (1994) recommended that effective staff training was needed to teach all health professionals how to present prenatal screening tests in ways that may lead closer to true informed decision making by women. In the UK, current advice (GMC 2012) to doctors about informed consent for screening, makes it clear that full information should be given and Raffle (2001) reminds us that since the earlier work of Smith et al. (1994) the NHS FASP (2012) has

also signalled the need for a changed approach to information sharing so that individuals are offered a choice based on appreciation of risks and benefits. By all disciplines having similar training with regard to ultrasound information sharing, then it may be possible for women to gain greater benefit from the implementation of the care pathways, by being provided with coherent and consistent unbiased information. Services need to be provided by caregivers who are valued and have a sound theoretical knowledge, good practical skills, combined with caring, compassion and understanding of the needs of the women they serve. With respect to this, it is important that all professionals, including doctors, be knowledgeable and equipped with the skills available to discuss ultrasound tests with women in their care. In order for women to receive full benefits from the implementation of the care pathways, it is important to address the idea of broadening the junior doctors' knowledge so they can feel confident in opening up a dialogue with women about the uses and limitations of the ultrasound scans to which women routinely accept. A junior doctor in this hospital was less positive with the idea of working within the protocols of clinical pathways because he felt the process was impersonal with no real communication with women and that the care was predominantly in the control of other health professionals (I5: p4). The practice of following the care pathways reduces the doctors' communicating role to a more defined clinical role of discussing only the diagnostic results of the scan, removing any experience for them to listen to and engage with women and perhaps, become more aware of the expectations the women place on their ultrasound scans. This demonstrates the idea that the theory of hegemonic gender belief is acting in this situation and perhaps by implementing structured observation sessions for junior doctors, they may be able to become more aware and actively involved in the information sharing process as it may engage them with more of an understanding of the expectations women place on obstetric ultrasound, and more importantly, provide the doctors with a more in depth appreciation of the problems that ultrasound practitioners may face when women attend with little appreciation of

ultrasound's capabilities and limitations in obstetric care. By gaining this insight, doctors in the future, may be able to work together with other health professionals in adopting improved information sharing skills such as those offered by McCourt (2006).

Conclusion

What has emerged from the study is that there are two aspects relating to how doctors may influence women in decision- making. Firstly, by the voluntary act of communication; what they say and how they say it and secondly, involuntarily, by their professional position that they hold in society. This chapter has explored these two aspects and has recommended two changes to working practice: development of the doctors' induction process to include information about obstetric ultrasound imaging and strengthening inter-professional collaboration of information sharing. Providing inter professional training and information, doctors may feel more engaged empathetically with prospective parents and will create better professional team work, but it may not alter what expectations women have of ultrasound scanning, because of the involuntary bias the doctors professional position (hegemonic gender belief) places on them. Foucault's idea on the 'clinical gaze' (Foucault 1976) by the way that the knowledge is being organised via a chain of command through the accepted routine care pathway, somewhat alienates women from the process of informed decision making and sets up a managerial power construction that is in the hands of those who develop the pathway, the government bodies working with the medical profession, rather than the professionals who work within it. Therefore, even by involving the doctors directly in information sharing with women, this may not in fact, change how women make decisions about opting for or against ultrasound imaging. All that may be achieved is a more knowledgeable professional workforce that is able to work

more effectively, by providing a consistent level of information to women who are required to consider opting for obstetric ultrasound scans.

The next chapter summarises the undertaking of this doctoral project.

Summary of Chapter Six- Changing working practice

The answer to whether doctors play an active role in information sharing with women about the ultrasound scans offered, is a complex one as what has emerged from the study is that there are two aspects relating to how doctors may influence women in decision-making. These are firstly, by the voluntary act of communicating information with prospective parents and secondly, involuntarily, by their professional position that they hold in society. This chapter includes recommendation for two areas for changes to practice: **development of the doctors' induction process to include information about obstetric ultrasound imaging** and **strengthening inter-professional collaboration on information sharing** in order to improve working practices within the clinical care pathways and which may improve the support offered to women seeking antenatal ultrasound imaging. However, this chapter concludes with the point that, these recommendations may not truly influence how well women take informed decisions over choosing fetal ultrasound imaging as other (involuntary) factors, based upon Foucault's ideas, act on their ability to make a truly individual informed decision.

Chapter Seven- Summary of the Doctoral Project

Introduction

This chapter provides an overview of this doctoral project. It considers the conclusions drawn from the study and identifies recommendations for changes to two aspects of working practice, both of which relates to the education and training of doctors who may be inexperienced in the field of obstetric ultrasound imaging.

7.1 Background to the research

- The continuation in the drive for improvements to antenatal service delivery together with the researcher's personal reflections of an "encounter" with a woman and her partner attending for an obstetric ultrasound scan provided the underlying motivation for this study. The creation of anxiety and distress for the woman because of her high expectations for a social experience, and having no real understanding that the scan was a medical examination, induced the need to explore how women are provided with information about ultrasound imaging prior to their attendance for the scans.
- Acceptance of a scan requires women to have consented and this requires them to have prior knowledge and understanding of the examinations, but in practice it appears that some women still consent to ultrasound screening tests or accept an obstetric scan appointment with no real idea of its capabilities, and more importantly, its limitations.
- Women interact with a variety of health professionals along dedicated care pathways, firstly when women attend hospital for suspected early pregnancy loss, and secondly for routine antenatal service, with each interaction having some influence on how much

information women receive about prenatal ultrasound. The decision to undergo an antenatal ultrasound scan is up to the individual. The duty of health care professionals, in particular when fetal anomaly screening is being offered, is to provide pregnant women with adequate information to make an informed choice.

7.2 A review of the literature

- There are large differences in the reported performances of routine screening programmes, which have caused a debate over their usefulness. Facing the variety in sensitivity figures, it is understandable why the reliability and utility of ultrasound screening for fetal malformations is a controversial subject that leads to many disagreements. Nevertheless, in most countries nowadays it is generally accepted that ultrasound screening is a useful procedure to permit the diagnosis of structural abnormalities.
- There may be evidence that women have unrealistic expectations of the capabilities of ultrasound to detect abnormalities and that it is important to educate pregnant women and their families about what is realistic and reasonable, and what may not be.
- Doctors, midwives and ultrasound practitioners all play a part in providing obstetric ultrasound services and appreciate the need for providing coherent information about the benefits and more importantly, the limitations of ultrasound imaging.
- Studies have been undertaken looking at the midwives perspective on the use of ultrasound but there is little information regarding doctors' views and experience of offering ultrasound scanning and most importantly, ultrasound screening to women.

- A review of the literature revealed a gap in knowledge surrounding aspects of the role of the medical profession in communicating information about obstetric ultrasound to women.
- The **focus of the study was to explore the doctors' perspective on obstetric ultrasound imaging, with the aim to establish whether doctors are active agents in unbiased information sharing with prospective parents about obstetric ultrasound imaging**.

7.3 The research method and analysis undertaken

- Statistical evidence in a quantitative study by Boyd et al. (2009) provides evidence to suggest that doctors endorse ultrasound use.
- The qualitative approach has both informed and complemented the findings of Boyd et al. (2009) and has strengthened the potential to inform the debate over ways of improving information sharing with prospective parents within the antenatal care pathways.
- Data was generated through unstructured, in-depth interviews with doctors working in the antenatal unit. The tool selected to facilitate the analysis process was the use of 'analytic framework' method (Ritchie and Spencer 1994) that allowed emergent ideas, and patterns of data to be captured and revisited through the five initial topics that were derived from analysing the results. Key issues were identified from the first two interviews, which formulated the framework to which the remaining six interview transcripts were compared.
- The data was manually analysed by the researcher. Memo writing was incorporated involving the researcher writing and reflecting on the research process and analytical decision, documenting the development of interpretations throughout the study.

- During the analysis, transparency to others was encouraged through the use of techniques such as; immediate member checking, the application of debriefing sessions, research bias (reflexivity) and the production of an audit trail.
- Verification of the findings from the data analysis were made through comparing responses from a final semi-structured interview undertaken with a senior doctor using a set of questions relating to the themes that emerged from the analysis.
- The three ethical issues that were acknowledged as particularly important in this study related to aspects of: anonymity, confidentiality and informed consent and these were each addressed during the setting up of the study.

7.4 Results of the study

- Doctors' training in obstetric ultrasound is predominantly based on how to perform an examination and the application of the diagnostic results.
- Junior doctors have no further training in understanding the capabilities and limitations of ultrasound scans and are given no information regarding fetal anomaly screening (20 week scan) in their induction programme.
- Doctors derive their perception of obstetric ultrasound from a combination of a small amount of factual information and their encounters with personal experiences of pregnancy. There is little evidence in the analysis that demonstrates that doctors display an enthusiasm to develop their knowledge of this aspect of ultrasound imaging, this may be down to the fact that they are unaware of the need.
- Doctors rely on other health professionals to provide women with information about ultrasound imaging.
- They believe that women have high expectations of ultrasound imaging and this will be hard to alter.

- Doctors may have misconceptions about ultrasound capabilities and often these misconceptions mirror women's expectations.
- Doctors see ultrasound imaging as a tool to provide women and themselves with reassurance and they want and believe women want more ultrasound scans.
- Junior doctors lack information about ultrasound capabilities and limitations with many deriving their perceived knowledge from personal and family or friends antenatal experiences.
- Doctors believe that by observing ultrasound imaging this will provide valuable understanding and skills to converse with women about the capabilities and limitations of ultrasound scanning however, increasing workload and pressures of service delivery, impact on the role of medical educators to train junior doctors and their concerns lie in the lack of time available to provide a more structured curriculum.
- The implementation of clinical pathways has created an environment where the doctors have less involvement in discussing the role of ultrasound imaging, so the need for doctors to be knowledgeable about the ultrasound's capabilities and more importantly its limitations is less of a priority. By nursing and midwifery staff taking the roles as first contacts with women, this appears to influence how much importance doctors' place on increasing their learning about this aspect of ultrasound use and by not routinely discussing these issues with women, they do not require to converse with women about their expectations of the examinations.

7.5 Discussion and conclusion drawn from undertaking this doctoral project

- There are three themes to the medical perspective on obstetric ultrasound imaging: doctors' knowledge and understanding of obstetric ultrasound, doctors' views on the

practice of ultrasound imaging and doctors' ideas on the concept of ultrasound imaging.

- Doctors, through a comprehensive curriculum, gain practical skills in performing basic ultrasound examinations as well as developing theoretical knowledge on which to base diagnoses, however they have only limited information regarding aspects such as ultrasound' s limitations in particular surrounding its role in fetal anomaly screening. Along with this, they receive, as junior doctors, little training in communicating skills required to support women being counselled for fetal anomaly screening.
- The most striking finding from this study is that junior doctors believe that the idea of being knowledgeable about ultrasound imaging is really about being proficient in the practical aspects of performing ultrasound examinations. There is a miss-match between their perspective on ultrasound as on the one hand, they have little educational training about the limitations of the ultrasound technique with learning only involved in the purpose of gaining practical skills whilst on the other hand they appear to demonstrate a strong reliance on the technique to provide them with reassurances within their medical practice.
- Without any training or educational support in the theoretical aspects of ultrasound's capabilities and limitations, junior doctors understanding of the use of ultrasound may be not by research evidence but by social influences. This idea of knowing through personal experience may be identified as a catalyst for fuelling this research problem.
- From the data, it has emerged that the answer to whether doctors play an active role in information sharing with women about the ultrasound scans offered, is a complex one as what has emerged from the study is that there are two aspects relating to how doctors may influence women in decision- making. Firstly, by the voluntary act of communicating information with prospective parents and secondly, involuntarily, by

their professional position that they hold in society. The study findings suggest that the **doctors are not actively engaged in unbiased information sharing**, neither voluntarily, through conversing with factual knowledge- sharing (demonstrated by their lack of such facts) and also because of the barrier formed by their professional title and the relationship this holds with the medical model, that generates an unbiased message suggesting that all tests are good. Foucault's idea on the 'clinical gaze' and 'natal panopticism' (Terry 1989), by the way that the knowledge is being organised via a chain of command through the accepted routine care pathway, somewhat alienates women from the process of informed decision making and sets up a managerial power construction that is in the hands of those who develop the pathway, the government bodies working with the medical profession, rather than the professionals who work within it. Therefore, even by involving other health professionals, who are part of the 'establishment', in information sharing with women, this may not in fact, alter how women make decisions about opting for or against ultrasound screening.

- There is a recommendation for two areas of change to practice: **development of the doctors' induction process to include information about obstetric ultrasound imaging** and **strengthening inter-professional collaboration on information sharing** in order to improve working practices within the clinical care pathways.
- However, these recommendations may not directly influence how well women take informed decisions over choosing fetal ultrasound imaging as other (involuntary) factors based on Foucault's ideas may still act on their ability to make a truly individual informed decision.

7.6 Outcome from undertaking the Study

- The findings from the study demonstrate the need for an improvement in teaching and supporting of doctors inexperienced in the field of obstetric ultrasound.
- The outcome from this study is a recommendation to supplement the educational training offered to doctors in two areas: firstly by additional learning sessions offered during the induction process regarding the skills underpinning the role of unbiased information sharing about obstetric ultrasound imaging and secondly, incorporating a formal observation session for doctors, with ultrasound practitioners in an attempt to engage them in the act of supporting women in the process of informed decision making.
- Future work in this area may lead to the development of an inter professional training group that would focus on supporting all health professionals in providing consistent, up to date information to women so that all staff may feel better equipped to discuss ultrasound referrals and fetal anomaly screening with women in their care.

7.7 Study Limitations

- It is fair to say that what has been captured here is only the subjective experience of the doctors working in a hospital department, however, it is a hopefully honest retelling of subjective experience that carries great strength

7.7.1 Accuracy of the study

- Hammersley (1992) says that 'an account is valid or true if it represents accurately those features of the phenomenon that it is intended to describe, explain or theorise'. There was no known bias with regard to the sample of participants interviewed.

- Labelling, during analysis, was kept as close to the wording and description generated in the raw data, therefore reflecting as closely as possible to the meaning assigned by the doctors interviewed.

- Checking of clarification, when appropriate occurred during the interviews with a checking of '*accuracy of fit'* by testing one part of the analysis during another interview. All the issues raised by the doctors in the interviews were originally identified and described as they were spoken and there is a clear display of how the data were formalised into the themes in order for readers to assess the analytical process.

- All the points from the framework were amalgamated into five initial topics with no loss of data, providing a rich source of information in terms of evidence that could be called upon during the classificatory and interpretative stages of the study.

- By performing a final structured interview (appendix 19, p 358) with a senior doctor from the department incorporating questions relating to the study results, provided another way of looking at the study data and also added credibility by strengthening conclusions drawn from the analysis. By using this *member validation* process it enabled the researcher's interpretation to be confirmed by another doctor with extensive medical experience. Results from the structured interview reflected similar findings to the analysis of the data from the original eight doctors interviewed. There were similarities between the responses to the questions in the final structured interview with the findings from the study, relating to the subject of what has been defined as the doctors' ideas of knowledge of obstetric ultrasound imaging. This provided a confidence in the analysis reporting that some doctors have limited perception of ultrasound's capabilities and importantly its limitations. Another strong similarity between the data and the member validation data was relating the importance the doctors place on ultrasound in their role and that they believe that

women also regard ultrasound imaging very highly during their antenatal care. When questioned specifically about the use of ultrasound in fetal screening the doctor in the member validation interview did not appear to regard the 20 week scan as a screening test. On asking to list the different ultrasound screening tests available to women, he did not name this routinely offered scan, which supports the findings that doctors do not personally consider the 20 week scan as an examination to screen for fetal abnormalities; a fact that appears to be mirrored in the existing literature that women too are unclear about the function of the scan and depicts the situation during the 'encounter' described at the beginning of this doctoral study.

Transferability

- Would a study of doctors from other hospital obstetric units give similar findings? The initial response would probably be no as other hospital's induction processes and in house training may not be comparable, however the study has revealed that the doctors take some of their ideas from their own personal experiences as well as the written national guidelines, so it may be that that the same concepts and categories generated from this study do exist among the general population of the medical profession and perhaps there may be some transferability of findings.

7.7.2 Benefits from performing the doctoral project

- The undertaking of this doctoral project has provided new knowledge in the form of an insight into the medical views and experiences of obstetric ultrasound imaging and supplements the existing literature surrounding the midwives perspective on ultrasound use in antenatal care.
- Although this new knowledge is limiting in its generalisability, it has delivered a valuable contribution to the discussion on searching for improvements to information

sharing with prospective parents within the delivery of antenatal services in this hospital.

- An interesting point should be made here in that since the participation of the interviews, several doctors have requested information and support in understanding aspects of ultrasound imaging from ultrasound practitioners and the topic of ultrasound's limitations has been informally discussed. Perhaps this is an example of a point made by Holtzman (1998) where he describes how changes occurred during development of care rather than through implementation. The very act of suggesting the need for change can be the catalyst for change.

7.7.3 Future Research

- The body of literature on doctors' personal experiences is still small and further work would be helpful in contributing to this area of knowledge. This research had a small sample relating to one hospital department. Research undertaken in more departments would be of interest to policymakers relating to inter professional working in such areas as clinical care pathways and perhaps in considering policy improvements to information sharing between women and health professionals in antenatal care.
- Further research into the use of a model of teamwork effectiveness, involving doctors, midwives and ultrasound practitioners, would be a valuable piece of research that would follow on from this doctoral project, with its focus or goal relating to improvements to education and information-sharing to both women and all health professionals on the important aspects of obstetric ultrasound imaging.

7.7.4 Dissemination

- This research is a unique contribution to existing literature and should be disseminated as it has revealed some important messages for medical educators, antenatal service

providers and other health professionals working in partnership with doctors to provide antenatal care.

- Work is proceeding on an article for an academic journal, but has not yet been submitted.
- One of the key drivers of the research study was to give doctors a voice; to share their stories and experiences and, I hope to disseminate the work to other doctors and the governing bodies responsible for the policies involving communication and information sharing within antenatal services. In the first instance, I will be talking to the health professionals within this hospital involving ultrasound providers, obstetricians and the midwifery professionals, with the intention to debate how we can effectively work together in improving our communication of important ultrasound information to our future service users. It is my intention to bring the results of this study to one of the weekly medical meetings in order to encourage a discussion with regard to better multi-professional working and training for this area within this hospital trust.

The final chapter relates importantly to the researchers own stance throughout the undertaking of this doctoral project.

Chapter Eight- Reflexivity

Introduction

This chapter describes the professional journey I encountered whilst working towards a doctoral award. It provides the reader with an insight to the progress I made as my learning evolved and how such learning has moulded my present way of 'thinking' and 'doing' in my professional practice. It reveals my contribution to the construction of meanings within the research process. Qualitative traditions require the researcher to be reflexive – self aware of themselves in the process, and to disclose this as part of the research finding acknowledging the influence it may have had (Creswell 1998).

Many of the research decisions made in completing this doctorate, including choice of the research question, have been based on my prior experience of practice. By knowing how practice happens it has been easy to identify sources of data, but it has been important to acknowledge how vulnerable the research could be to accusations of 'subjectivity.' Theoretical perspectives have influenced my motivations and the assumptions underlying the main research question and proposal; throughout the research these influences have interconnected and been recognised and acknowledged. As the researcher I accept that my own background and experiences within the field have shaped my interpretation of the data generated and that I am "positioned" within the research acknowledging that my interpretation comes from my own personal, cultural and historical experiences (Marshall and Rossman 2006). The basic assumption guiding this qualitative method is that knowledge is socially constructed by people active in this research process, and that we should attempt to understand the "complex world of lived experience from the point of view of those who live it" (Schwandt 1994)

In the early part of my doctoral journey, through structured learning and discussions about different methods of learning, I came to value the work of Kolb (1984) and found the four stages of his 'cycle of learning' a support in which to frame my thought processes throughout

the formulation of the research question. I began by analysing critically, the 'encounter', described in the beginning of this work that created the initial motivation that steered me into the doctoral programme. Within the first stage of *Kolb's cycle of learning* (appendix 1, p 238), I considered my previous professional role as a radiographer, comparing my professional practice in radiography with my present role as an ultrasound practitioner.

8.1 Past professional experience

Radiography involves the development of many skills as well as understanding of a large knowledge base, incorporating theory relating to anatomy, physiology, physics and techniques such as photography. Knowledge can be highly explicit and theoretical as in the case of radiography, however, knowledge can be tacit and I came to understand, during discussions in the first year of the doctoral programme, that use of my tacit knowledge was limited.
Lam (2000) sees knowledge as extending in two dimensions: explicit-tacit (the epistemological dimension) and individual-collective (the ontological dimension). The interplay between these dimensions gives rise to four categories of knowledge; embedded, embodied, embrained and encoded. During discussions within the doctoral programme, I have come to realise that I have developed, during my radiography training, a large amount of knowledge which Lam categorised as *Encoded* knowledge,

> *"a knowledge that has been codified and tends to generate a unified and predictable pattern of behaviour and output in organisations".*

We can think of knowledge as a body of skills, practices and understanding that we possess and use in practical ways, in other words knowing by doing rather than knowing by thinking or by reasoning. In radiography, it is less to do with interpretation of the knowledge taught, and more about its application. *Encoded* knowledge is sometimes described as *"information"* and is

often formulated into procedures and written rules, which, in turn provides a good structure for control in organisations such as a radiography unit.

Lam (2000) makes the point that, organisations are made up of a mixture of these four knowledge types, however, the organisations themselves can be dominated by one type, with their capacity for harnessing tacit knowledge varying greatly. Professions like Radiography, traditionally characterised by an explicit knowledge base, tend to have formal structures of control and demonstrate highly standardised tasks and work roles.

Lam (2000) summarises different organisational forms associated with "dominant knowledge types" and it is from this that I identified the term "machine bureaucracy" with the radiography profession. It depends heavily on "encoded knowledge" and is designed to achieve efficiency and stability; both principles aspired to by many health care professions. This type of organisation is continuous in its effort to improve through eliminating uncertainty in its operating tasks and perfecting the professional role. The "*knowledge agents*" are not the individuals directly performing the tasks, but the managerial hierarchy responsible for the rules and performance standards. In this group there is a clear distinction between the "application" and "generation" of knowledge and it is structured to minimise the individual's knowledge.

The "*machine bureaucracy*" seeks to minimize the role of tacit knowledge; it learns through "performance" monitoring. This type of organisation can only accumulate new knowledge by means of a slow process of formalisation and organisation. It has a structure that is designed to deal with routine problems but lacks the ability to deal with a major change.

Radiography is a science, with application of skills being an important aspect of the training and as a student, I learned quickly and succeeded in many areas of radiography practice, but as Lam (2000) describes, improvement and learning of new knowledge is limited by this type of organisation and the confidence to explore tacit knowledge is limited.

8.1.1 Radiographer to ultrasound practitioner

Although I had worked in imaging as a radiographer, for over ten years, the professional skills relating to the field of ultrasound are structurally different. In his writing (Lam 2000) describes professions like medical ultrasound as a "Professional Bureaucracy" due to its capability from the combination of the highly trained individual experts. Unlike radiography, where a managing hierarchy dominates the organisation, ultrasound practice is organised by the individual professionals who are the "authorized experts", where their formal training and professional affiliations provide the roots of their authority. As understood by this organisational structure, solving a problem can be achieved by applying a wealth of explicit knowledge but, like the organisational type demonstrated in radiography, both state that the use of tacit knowledge is limited. It is here, that there is a difference in the application of tacit knowledge. As an ultrasound practitioner, the application of tacit knowledge appears to be used in parallel with the explicit knowledge learned during the training period.

It is interesting to link these sentiments with the 1993 Science White Paper *Realising our Potential* where the view is expressed that

> "...Research training itself should be more closely linked to the needs of potential employers" and that more research students should undertake work in "industrial and commercial settings" in the environment "in which research and development operates" (Great Britain Cabinet Office 1993)

The professional Doctorate offers an alternative to the PhD, at the same level, but with differences in emphasis that suit the needs of the consultant practitioner. Research skills are needed in professional practice, because radiography must not continue to be simply an uncritical *consumer* of research but needs to generate and evolve its own knowledge base. Patients want excellent care from educated practitioners and this means that research must

take place within clinical areas and have its focus on patients and practice. My drive comes from the need for me to be good at what I do and feel that I will not let anyone down within my professional practice. A routine obstetric ultrasound examination cannot detect all structural birth defects. The accuracy of an ultrasound examination is determined by several factors; however the most important of these is the competence and experience of the operators. Unlike my past role as a radiographer, where my skills were measured by the quality of the radiographs produced and were judged against a set of criteria, ultrasound relies on the decision, after viewing the fetal anatomy, in real-time imaging, as to whether it is normal or abnormal. To take the decision that there is no abnormality in the fetus or no lesion in the abdomen requires confidence in one's judgment and there are times in practice when an abnormality or problem is not picked up that negatively impacts on your level of confidence.

8.2 Clarkson's four stages of learning

This feeling of confidence is dependent, not only the incurring of practical skills as a professional, but also to how I feel about myself and whether I feel that I am continually learning and able to improve my ability to perform. For many years I have worked in the field of ultrasound and with this there is the assumption that, the longer you practice the less you need to learn, however it becomes apparent through practice that learning never stops. Clarkson (1994) explains that learning is a never-ending process and relates the learning process to four stages:

> Not knowing what they don't know (unconscious incompetence), labelled; *The fool*
>
> Becoming aware of what it is they don't know (conscious incompetence), labelled; *The apprentice*

Knowing what they know and how to do it competently (conscious competence) labelled; *The master*

Exercising one's skill or knowledge habitually (unconscious competence), labelled; *The mechanic*

It is interesting in the model, when we look at "the master", how we would expect to see this position at the 4th stage, but Clarkson (1994) suggests that "the master" has reached the very top and begins to perform automatically, moving into unconscious competence along the spiral to the stage of performing mechanically. It is this level that I can relate to, when the number of years working in the field is great but the time of reflection and re learning is short. Within the work place time is not allocated for this reflection and I try to accommodate this practice within the normal working day, however, as in many areas of health service delivery, most of the working day is taken up for direct patient contact in order to fulfil the capacity and demand strategy and provide a cost effective service. Regular time for re-learning and self-evaluation is not built into the normal work schedule with the structure of many professions like my own seemingly to preclude reflection in practice. It is this need that encourages the use of reflection in overcoming workplace problems and returning to "the *apprentice* " that motivated me to undertake this doctoral piece of work.

This work has demanded personal involvement and pragmatism in its execution from the beginning, yet the approaches taken frequently manifested in the juxtaposed identity of researcher, colleague, wife and mother. Anthias (2002) suggests that understanding personal identity has only limited heuristic value but that exploring positionality is more useful for addressing a range of situations that are compounded by collective identities. Conducting a qualitative study generates a multitude of such collective personal identities. Frequently these identities are interconnected and can in turn have a wider professional implication. It is therefore important to highlight these elements of positionality prior to describing the

professional stance that developed in this work. During consideration of the 'reflective' stage of Kolb's cycle, I chose to mentally 'relive' the 'concrete' incident in order to 'see' the parents' perspective. This account is contained in the appendix, but the main value I gained from this was that it led me to consider 'who' I am, within my professional role.

8.3 Who I Am

I spent several weeks exploring, through the technique of 'free writing' (Bolker 1998) my different perspectives. As well as being a professional, I am also a researcher in the field and to complicate the issue, I also, like the woman in the incident, have previously experienced the difficult decision to choose whether to opt into screening tests during my pregnancies and I felt it was important to consider these different standpoints separately.

8.3.1 A Woman/ Mother

We spend our lives trying to avoid ourselves falling into uncomfortable situations where we do not know the answers. Awareness of these situations can lead to deep, thorough self-questioning. At these moments of openness understanding appears, epiphanies of allowing our self to stop thinking stop being ourselves and allow other possibilities to emerge. We take on many different roles all with uncertain boundaries between them, we try to clarify these roles and search for answers that are relevant to our positions, yet I have come to appreciate, that saying "I don't know" to one self, can be life changing. Yelloly and Henkel (1995) describe the difficulty for professionals in such anxiety-producing work to remain open and responsive. They believe that effective learning is dependent on access to that world of feeling and fantasy, which allows structures of meaning to be recognised, and suggest that we should be open to change, in a way that facilitates a different professional response. There are different strategies as tools for reflection. Strategies often mentioned are contemplation, professional writing, and

discussions with peers or expert about one's experience, however, I was drawn to consider the viewpoint of the woman in "the encounter", by imagining I was her on that day. This has allowed me to engage in learning, as I had not experienced before entering the doctoral programme and through creative writing, it has widened my understanding and increased my skills in developing my professional role.

8.3.2 The Professional- competence

The accuracy of an ultrasound examination is determined by several factors; however the most important of these is the competence and experience of the ultrasound practitioner. Unlike working as a radiographer, where skills can be measured by the quality of the images that are able to be measured against a set of criteria, ultrasound relies on the decision, after viewing the area or fetus in real-time imaging, as to whether it is normal or abnormal. It is often easier to make the decision when it is abnormal than when you think it is normal; if you find it, then you have proved it is there. To take the decision that there is no abnormality in the fetus requires confidence in your judgment and there are times in practice when an abnormality or problem is not identified until the birth; then this inevitably reduces your level of confidence. The desire to become good at whatever we do and improve on this is a motivating force. This need has been called "Self- actualization" Clarkson (1994). Being competent is a very significant aspect of our life and work achievement and satisfaction. Clarkson, in her work with high achievers, saw a common problem of lack of self-esteem that the way they felt about themselves did not always match the praise that was bestowed on them. She labelled this common theme, the syndrome of pseudo competency, describing it as the need not just to act competent, but also to be seen as and to feel competent. The group Clarkson worked with had a shared fear that they were always covering up their secret flaw and she learned that most people have one or more areas of their life that they feel that they become "overactive" to compensate and then feel that they may not be able to repeat their own success in the future. I

can identify a pseudo competence within myself since the incident that I now reflect upon and although I now have experience in dealing with difficult questions and situations that occur within my professional practice, I lack the skill to think in any other way but through a scientific perspective. I feel this is my "*Achilles Heel*". Clarkson points to the underlying problem, in that the person fails to go back to basics and retrieve that part of their learning that is missing. I am able to look back over the last two years, within the doctoral program and confidently state that my learning has taken me someway towards eradicating my "Achilles Heel". It was through following Kolb's cycle that actually helped frame the present research question. Before commencement of the doctoral programme I was fearful that I had fallen into Clarkson's fourth category i.e. "the mechanic", but I believe that my personal and professional reflection along with the appreciation I have developed of other peoples' perspectives, has re aligned my thinking towards a better way of learning that will improve my professional practice and re instate my way of learning to a *conscious competent* stage.

8.3.3 The Learner- continuing professional developer

During the first year on the doctoral programme, I discovered how learning can occur through other means, such as creative writing and I reflected on the literary work *Hard Times,* written by Charles Dickens. Dickens expresses his views on the principle of learning and applying facts to improve ones self and as a whole society. Dickens portrays the principle that, above all, the most important concept of social improvement was the learning of facts. It is in the opening of the story that this concept is introduced by how determined Gradgrind, the school master, is to teaching his own children according to the "system" of facts and no feelings or imagination. The target Dickens consistently hits is the complacent and detached viewpoint that recommends facts and figures in situations where emotion and imagination are called for instead. I recognised some similarity between Dickens point and my position during the incident

described earlier. My perspective on the 'concrete' incident came from a deliberate consideration for the facts regarding the ultrasound scan that the woman had attended for, with little consideration on my part, over the emotional feelings of the woman. Professional practice is concerned with the manner in which practitioners perform the roles and tasks of their profession in conjunction with individuals who are their clients or patients. It includes but it is not limited to the application of theory and practice principles to real-world problems. The difficulty for professionals lies with the messy nature of these problems, unlike the organised textbook descriptions upon which much professional training is focused. Situations to which we apply our practice are often complex because they involve people and people bring to the situation their own perceptions, needs and experience, an important point clearly evident in the incident by the woman who had come for the scan with her own reasons that were quite apart from the theoretical indications I offered for performing the test.

8.3.4 The Researcher

Understanding the text and passing successfully the postgraduate examinations gave me the title of a professional but not the whole knowledge. It did not prepare me for the knowledge required to be prepared for such situations as the 'concrete' incident described.

The dilemma of the practitioner lies in the fact that both ends of the gap he or she is expected to bridge, with the profession are changing rapidly: the body of knowledge that the practitioner must use and expectations of society he or she must serve. Both these changes have their origin in the same common factor-technological change. The problem cannot be usefully phrased in terms of "too much" technology. Rather, it is whether we can generate technological change fast enough to meet the expectations and demands that technology itself has generated.

It was during a discussion in the classroom on 'framing the research question' that I realised I had not come to the programme with my question of enquiry, as I originally thought, but that all

I had was a problem and through talking with others and keeping a research diary, I came to realise that my view of my chosen topic and how it is conceptualised has changed significantly since beginning studying at this doctoral level.

8.4 Developing reflexivity

I have developed reflexivity as a practitioner-researcher through keeping a research journal, an idea that came from Bolker (1998), *Writing Your Dissertation in Fifteen Minutes a Day.* In her book she explains the process that you will learn to write in order to think, to encourage thought, to tease thought out of chaos or out of fright. I followed the advice and began free writing, the skill of writing down what comes into your head without stopping to think or correct your grammar and spelling, but just to let all of your ideas spill out onto the page and it was through this technique that I wrote notes about my thoughts, feelings and actions as the research developed. Extracts from the journal are used as examples to give the reader a sense of my thoughts threaded through the research process.

Through writing the diary I developed a self confidence in which I was able to explore ideas and feelings and I was able to try things out imaginatively but I also began to appreciate that I can only write a good piece of work if I have first explored, through free writing, all my thoughts and feelings on the topic and by becoming immersed in these, I have been able to achieve a level of effective reflective practice. Throughout my diary there are many extracts that are linked to the theme of exploring communication with women in my professional practice, with a focus repeatedly highlighted in the need to draw upon other people's perspectives, including other professionals as well as service users. I have moved from this consideration to building a framework supporting these different perspectives and after literature searching and discussing with others in the programme, I found my question of enquiry. Paul and Elder (2006) consider the skill of taking thoughts apart and considering them from a wide range of viewpoints is an

important technique and through following the doctoral programme, I have come to learn this new way of improving practice and through a qualitative piece of study, Active Experimentation of Kolb's cycle of learning I have generated data surrounding the personal views of the medical perspective on their experiences of offering ultrasound examinations to pregnant women. The statement "*I had the same expectation of ultrasound screening as the pregnant women I saw having the scans during an observation session*" made by a junior doctor in his interview, probably had the biggest impression on the way I interpreted the data that was generated. After reading this statement, it elicited the need to re analyse all of the previously read data from a different perspective. Until that point in the data, my analysis was influenced by my conditioned belief that doctors have knowledge. The honesty portrayed through that statement made me realise that I needed to review the data not with the presumed idea that doctors do have knowledge but rather with the idea that it was important to question whether they have the knowledge.

8.4.1 Who am I now!

From my experience on this journey of learning, I have come to realise how much I have changed in the way that I now approach my professional practice. The reflection (appendix 5, p. 241), through diary entries, conversations with a critical friend and the almost self absorption into other people's perspective on my professional role has taken me away from being a 'positivist' thinker, where key ideas include: only those phenomena which are observable can be counted as knowledge and knowledge is developed inductively through the accumulation of verified facts (Bryman 1988), to having a more 'interpretative' perspective. As Kant, who in 1781 published his *Critique of Pure Reason*, argued that our knowledge of the world is based on 'understanding' that arises from thinking about what happens to us, not just simply from having had a particular experience. Self doubt seems a common feeling shared by the group and I have found an immense benefit from peer support with the breadth of experience,

students bring to the sessions, raising my level of confidence and helping me to appreciate how much I have learned since beginning the programme. Recognition of the importance of experience as a basis for learning (Boud 1985) has been central to my understanding of the use of reflection in my own professional role. With experience, I engage in exchanges with the world of professional practice, using my existing knowledge, skills and attitudes within the context of my own professional service delivery. Boud (1985) provides a foundation for our understanding of the use of experience in learning as; experience being the foundation of and stimulus for learning and that prior experience will influence all our learning. We construct our own experience and our learning is socially and culturally constructed and occurs in the socio-emotional context. I came to understand, that learning is not purely a cognitive process. It also has affective and cognitive features and as such is a holistic process in which feelings, emotions and action are as necessary as the cognitive processes, which occur during and after the experience. This understanding helped me to feel less guilty about the feelings I experienced during and after the 'incident 'and gave me a new confidence to value the experience as an aid, a 'map' to identify the important signposts on my 'learning' journey. Throughout my journey, the old me, likened to some of Gradgrind's thinking (Dickens 1854), where facts and figures were principal factors in my professional role, has been remoulded into, a new me, a professional who views other people's understanding as another important component, when considering ultrasound practice. By the way that I have considered and come to understand more about that 'incident' I have come to realise that the focus that required improvement was not necessarily the need to change women's expectations of the ultrasound examination, but perhaps it was the need for me, as a professional, to understand and incorporate the woman's view into my own understanding of my professional practice. I may not have arrived at a solution to the workplace problem, but at least, in part, I now know where to start looking.

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Appendices

Appendix 1 Experiential Learning (Kolb)

Building upon earlier work by John Dewey and Kurt Levin, American educational theorist David A. Kolb believes "learning is the process whereby knowledge is created through the transformation of experience" (1984, p. 38). The theory presents a cyclical model of learning, consisting of four stages shown below.

- concrete experience (or "DO")
- reflective observation (or "OBSERVE")
- abstract conceptualization (or "THINK")
- active experimentation (or "PLAN")

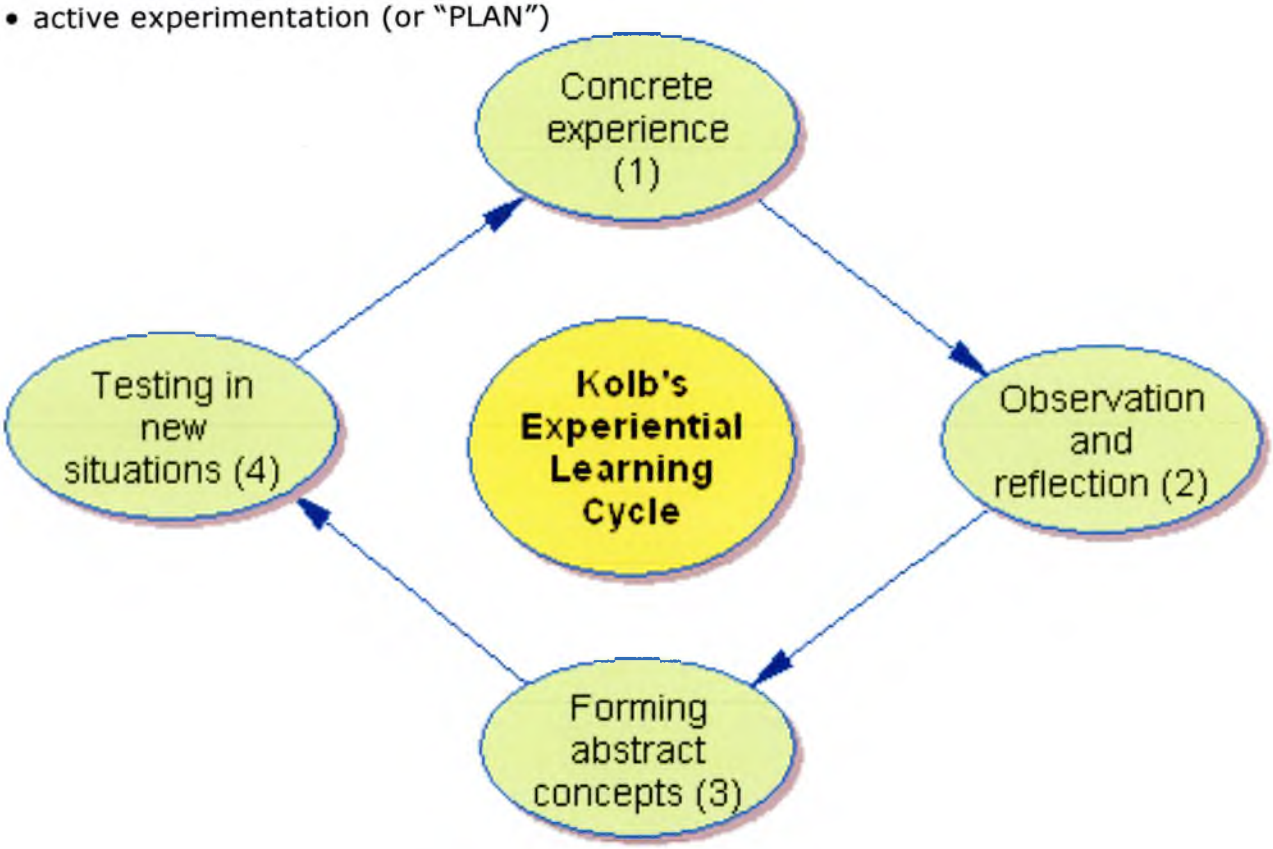


Figure 1. *Kolb's Experiential Learning Cycle*.

Kolb's four-stage learning cycle shows how experience is translated through reflection into concepts, which in turn are used as guides for active experimentation and the choice of new experiences. The first stage, *concrete experience* (CE), is where the learner actively experiences an activity such as a lab session or field work. The second stage, *reflective observation* (RO), is when the learner consciously reflects back on that experience. The third stage, *abstract conceptualization* (AC), is where the learner attempts to conceptualize a theory or model of what is observed. The fourth stage, *active experimentation* (AE), is where the learner is trying to plan how to test a model or theory or plan for a forthcoming experience.

Appendix 2 NHS FASP standards for obtaining consent

NHS FASP recognises there are complex issues surrounding ensuring that women can make an informed choice and give consent to the fetal anomaly scan. To help health professionals the Programme has published **specific guidance and standards relating to the consent process**.

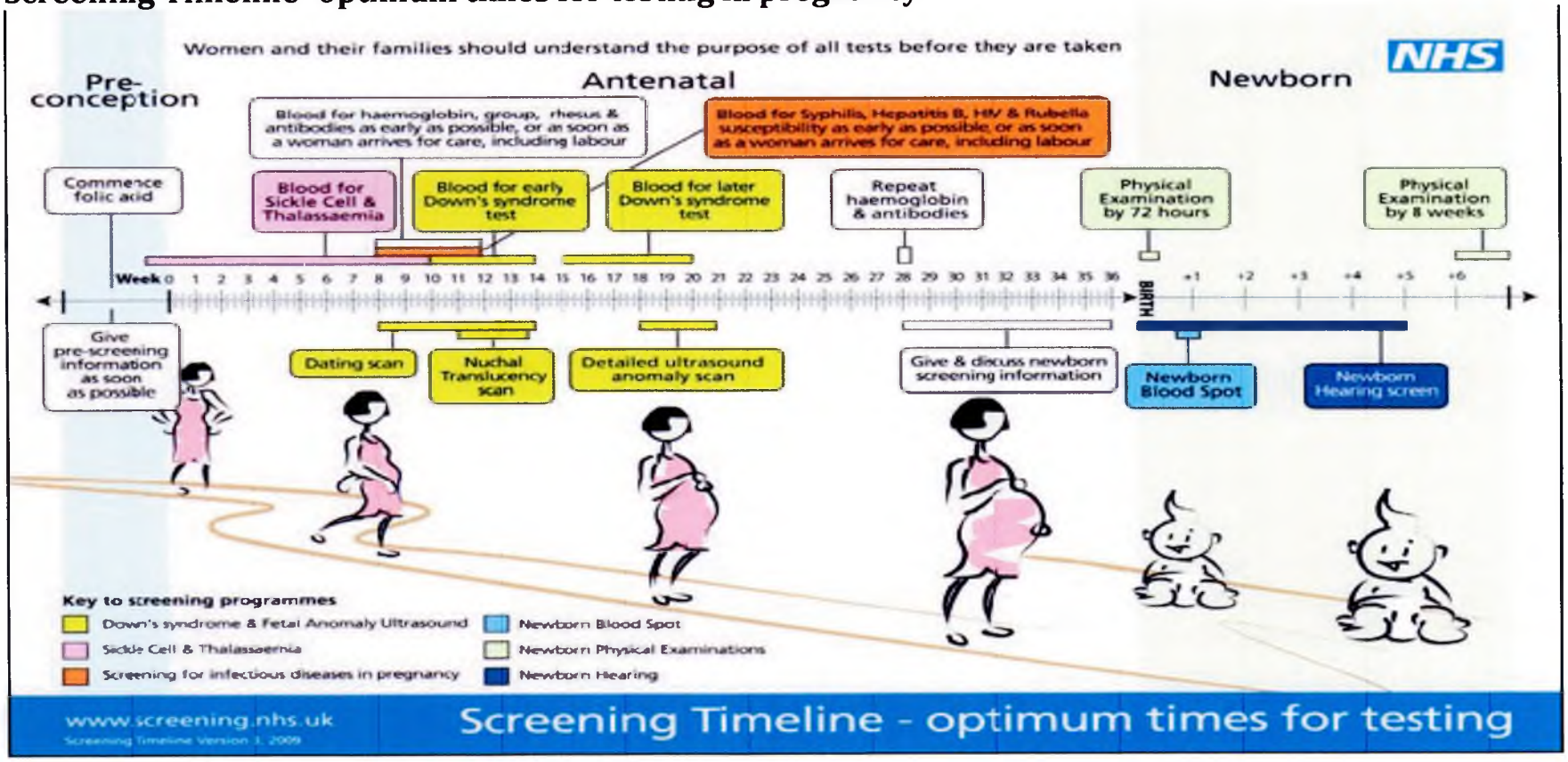
The standards for obtaining consent make it clear that:

- Written and verbal information should be given early in pregnancy
- Systems should be in place to provide information when there are language or other communication barriers
- The health professional generating the referral for the screening scan should have enough knowledge about the scan to be able to describe the procedure and its implications
- Women should have a further opportunity to discuss the 18^{+0}-20^{+6} week scan before attending for the scan
- Documentation should make it clear whether the woman has consented to the scan
- The health professional carrying out the scan is ultimately responsible for ensuring that the woman understands the procedure and has given her consent
- There should be written evidence that the woman has given her consent
- There should be an audit trail of pre-scan information provision, discussions and consent

The Trust will be required to conduct annual audit in relation to the standards.

Appendix 3

Screening Timeline- optimum times for testing in pregnancy



Appendix 4 Detection rates for fetal abnormalities by the Fetal anomaly screening programme (UK NSC FASP)

Expected detection rates of abnormalities in the Fetal Anomaly Screening Program	
Condition	**Detection Rate (%)**
Anencephaly	98%
Open Spina Bifida	90%
Cleft lip	75%
Diaphragmatic hernia	60%
Gastroschisis	98%
Exomphalos	80%
Serious cardiac abnormalities	50%
Bilateral renal agenesis	84%
Lethal Skeletal dysplasia	60%

Appendix 5 A reflective piece of writing in response to the concrete experience (encounter)

Key words taken from the reflection in bold font

Wearing her shoes!

There is a pain in my feet, both of my feet as my toes are crunched into smaller shoes than I would normally wear. However, this is not the only feeling I am experiencing right now. I have a strange sensation within me; I am unsure how to describe this feeling, only that it is a mixture of ***anger and upset****. I am* ***feeling*** *I want to scream out loud. This was not what I* ***expected*** *the day to be like. The* ***midwife*** *had* ***invited*** *us to come along today to* ***see*** *our baby. We were both* ***excited*** *over this. They did* ***not say*** *that I was to lie on a hard table in an* ***examination room*** *and be subjected to* ***interrogation*** *over what I thought the test was about. This was going to be the first time that we would* ***meet our baby****; the same little person growing inside me. I was exciting about trip to the hospital; we were* ***both feeling very positive****. We were* ***full of expectations****, talking about our* ***future plans****. Even laughing about the about the problem of parking, but now, as I lay on the table, my belly exposed,*

listening to the lady prattling on about me being ***fully informed*** *about a test, all I feel is* ***anger*** *and* ***confusion****. Why is this person saying she can't show me my baby, or rather, she won't show me my baby? All she has to do is to put that machine on my belly and I will see my baby. We will* ***see my baby waving*** *and perhaps it will even be sucking its thumb.* ***Everyone knows this is what happens*** *when you come for a scan. You* ***see it all the time, on the television****, couples come for a scan and they* ***see the baby waving*** *and they* ***go home with a photograph*** *to* ***show to their family*** *and* ***put in the album****. It's a very* ***moving experience****; they say it* ***helps you bond*** *with your baby. It* ***shows the baby's character****; they even say* ***it helps me prepare for motherhood****. How can I be prepared for motherhood when this lady won't even just show me my baby? I* ***haven't really come to see if it's alright*** *although it* ***would be nice to have it confirmed that it is alright****, but* ***I know it's alright; I know because I'm its mother****. This lady seems to think that she can only show me the baby if I allow her to look for problems or abnormalities.* ***I do not know whether I want to know if there is an abnormality****. But I would* ***like to see the baby's heartbeat****, although I have heard the heartbeat and that was a very moving experience. I would like to* ***see the baby and I want the full experience****. After all, it's what this test is for, isn't it? Apparently now I have to go and talk to another midwife, so they can explain what the test is really about. This lady has tried to explain that she* ***requires my consent****, but* ***I must be consenting, because I'm here****. I want to see my baby.* ***My partner wants to see my baby****, I want to take a photograph home, the* ***family are expecting one****, but I didn't really come to look at my baby's kidneys or spine really, I only wanted to see my baby in the flesh****. I want to see my baby moving****, I want to see this baby waving to me and I want to meet my baby. Is this wrong?*

Come to think of it, it does seem a little peculiar that we are having this experience or being invited to this type of experience, in a medical room. ***Why can't they make it more enjoyable****? Why can't they make the surroundings more pleasurable, instead of all this clinical equipment around? Why does the lady performing the scan have to wear a uniform? It* ***looks more like they're going to perform a medical test*** *rather than showing us our baby. This lady is* ***talking to us as though she might find a problem*** *with my baby and this is* ***making me think there will be a problem*** *and I am now* ***getting very scared****. Surely, if there is a problem with my baby, then I would know, because I can feel the baby, so wouldn't I be able to tell. As the baby's mother, I wouldn't feel this well or this happy if there was something wrong, would I?*

I am very upset now, because this lady has refused to show me the baby. I feel helpless, laying in this position, with the lady towering over me and I feel like I have no option but to leave the room without my photograph or my experience. I ***now have to speak to another midwife****.*

Emergent themes/areas of consideration

- Women's expectations on ultrasound use in obstetrics

- Professional's role in provision of information and seeking consent for ultrasound scans
- Capabilities and limitations of ultrasound scans in pregnancy.

Appendix 6

Examples of searches with Key words, initially performed (taken from 1995-2002)		
	Hits	**Reviewed**
Women's views, ultrasound and pregnancy	657	Including 1 systematic review (reviewed 200 papers) used as a foundation search
Obstetrics, ultrasound, research methods	15	1 lit review, 1 ethnography, 1 online questionnaire, 1 grounded theory
Obstetricians role and prenatal care	26	10 (not followed up if no abstract)
Decision making and obstetric ultrasound	40	5 stored and 1 followed up related articles
Obstetrics and Pathways and doctors experience	745	Mostly quantitative studies and the practical role of pathways and care- plans for pregnancy and related pregnancy conditions. 1 qualitative paper followed up
Informed choice and obstetric ultrasound	540	18 followed up
Midwives views, obstetric ultrasound	55	3 followed up
Doctors views, and obstetric ultrasound	255	1 followed up

Appendix 7 & Appendix 8 Systematic review used as a foundation for chosen articles incorporating Greenhaulgh's checklist

	Clinical question	Setting/ Participants selected	Method Data collection	Method of Analysis	Conclusions drawn	Reason for inclusion		
Garcia et al, 2002	Women's Views of pregnancy U/S	UK funded N/A	**Systematic Review**- 74 primary studies represented by 98 reports. Studies from 18 countries were included, and they employed methods ranging from qualitative interviewing to psychometric testing. The review included studies from the very early period of ultrasound use up to reports of research on	Studies of women's views about antenatal screening and diagnosis were searched for on electronic databases. Studies about pregnancy ultrasound were then identified from this material. Further studies were found by contacting researchers, hand searches, and following up references. The searches were not intentionally	U/S is attractive to women and their partners maybe because it provides early confirmation of the fetus and reassurance about fetal wellbeing Women's early concerns about the safety of ultrasound were rarely reported in more recent research. Women often lack information	Within the 15 years search Well conducted systematic review Keywords: **Women's views and obstetric and ultrasound** Refined using obstetrics and gynaecology, journals including peer review articles, English Language to provide approx 2,000 Using Greenhaulgh's checklist , it		

			contemporary practice.	limited by date or language. Studies that reported direct data from women about pregnancy ultrasound were then included in a structured review. Studies were not excluded on the basis of methodological quality unless they were impossible to understand.	about the purposes for which an ultrasound scan is being done and the technical limitations of the procedure. The strong appeal of diagnostic ultrasound use may contribute to the fact that pregnant women are often unprepared for adverse findings. One key finding for clinicians was the need for all staff, women, and partners to be well informed about the	addressed the research question, a thorough search was described and over 200 papers identified. Studies were not excluded on the basis of methodological quality unless they were impossible to understand. They were read by one author and tabulated. The review then addressed a series of questions in a non-quantitative way. Medline, CINAHL, EMBase, and		

					specific purposes of ultrasound scans and what they can and cannot achieve.	BIDS-SSCI. It picked up approximately 200 publications, many of them providing general background.		
Appendix 8-Chosen papers from the systematic review (reviewed criteria following Greenhaulgh's assessment checklists, p217)								
	Research question	**Settings and participants selected**	**Was a qualitative approach appropriate? And method employed**	**What analysis method employed**	**What were the results and conclusions drawn.**	**Were the results credible?**	**Did the question describe a clinical problem?**	**Findings transferable?**
Anderson, 1995	Find out women's views about u/s to improve the knowledge provided	UK, West Midlands, mat unit 50 consecutive pregnant women	Yes Short questionnaire		Results tallied fairly well with the information leaflets	Yes	Yes	Yes
Baillie (1997 and Baillie et al 2000	Study of impact of being false positive	UK 36 after triple test and 24 after u/s	Psychometric testing and qualitative interview		Women unprepared for adverse findings from scan	Yes	yes	yes
Dixon, 1994	Study to review how much information	UK, 200 consecutive women	Survey comparing interviews of		Highlights need for women to be	yes	yes	yes

	women have about u/s	attending 18 week scan	100 women receiving info prior to scan with 100 women not receiving info		aware of the purpose of the scan			
Eurenius et al,1997	Perception of info and expectation among women and their partners attending a mid trimester u/s scan	Sweden 393 unselected, consecutive women and partners coming for scan	Questionnaires: part 1 completed by 299 women and 255 men; part 2 by 271 women and 228 men. Part 1 completed before scan and part 2 after scan returned from home	Quantitative analysis	Feelings far more positive than negative about u/s for both men and women. Anxieties before scan related to baby's health and abnormalities, only 2% women feared that u/s may harm baby.	yes	yes	Partial as caution taken due to the published date
Kohut et al, 2002	Seek women's knowledge of prenatal ultrasound and informed choice	Canada 113 women cross sectional study	Questionnaires prior to the 18 week prenatal scan	FET and $ point Likert scale	50% stated they received no information from their care provider. Only 31.9% considered health care providers as a	yes	yes	yes

					"very helpful" source of information. Yet, 69.0% stated their care provider gave them information that facilitated their understanding. Gaps were identified in women's understanding of ultrasound. Specifically, 46.0% did not view ultrasound as a screen for anomalies; some were uncertain about their safety (18.6%), diagnostic capabilities (26.5%), and limitations of			

					testing (37.2%).			
Larsen et al, 2000	Explore women's knowledge and views about 2nd trimester u/s	Denmark 500 unselected consecutive women	493 questionnaires		Women's knowledge of scan generally good, fewer than 1% felt scan made them feel less secure.	yes	yes	Not in UK so may not be truly transferable
Stephens et al, 2000	Assess reasons for wanting or not wanting u/s, how many and the willingness to pay	USA 137/150 low risk women	Surveyed 150 prenatal women.	Descriptive statistics for categorical variables. Non parametric statistical analysis to determine differences between groups and to calculate correlation coefficients.	98% wanted, 37% prepared to pay for it. Reasons included: determine gender, to determine health and growth; for reassurance.	yes	yes	? whether a military study would sample a similar population
Thorpe et al, 1993	Raises the question whether the routine scan conveys the message that its use is both	UK 30/42 approached agreed to u/s (cerebral) 12 declined.	Interviews.	Not specifically designed to examine mothers' views of u/s and therefore has some	Many concerned about safety. Categorised by some women as being for reassurance	yes	yes	yes

	valuable and safe. Women's reactions to pregnancy u/s and to cerebral u/s of newborn			limitation in that they did not control for factors which might affected mothers reflections on u/s. Small question series No analysis method specifically named	and the confirmation of normality. Also it has emotional appeal. Immediate satisfaction felt by women from u/s feedback. Questions whether women should be informed on u/s safety and use.			
Searle 1996	Explores the association of antenatal patients' anxieties about their own welfare and that of their fetus in terms of the antenatal investigations that are performed during	Australia A cross-sectional and qualitative study of 376 postnatal women	A self-administered mail survey. 633 women aged 15–45	EPI info Version 5 Georgia, USA	Women felt positive towards the value of the tests, were confident in their results and felt positive towards the adequacy of information; however, their understanding	yes	yes	Partially, but caution with the date of publish and not a study in the UK

	pregnancy				of this information seems to be poor. It seems that the choice to undergo testing is not well informed. It was clear women need more support, information, explanations, and more time to absorb the information.			
Further searches after the systematic review literature								
Sturm and Ormond, 2004	Patients decisions regarding ethnic carrier screening	USA 37/367 responded	Open and closed questions through interviews over the telephone lasting 7-15mins. .	Analysis by SPSS and ANOVA for quantitative questions. Limited use due to small sample size. Analysis of emergent themes for qualitative data.	Findings suggest decision making factors differ between those electing and declining adjunct prenatal testing and increased knowledge about these	yes	yes	yes

					factors may impact the way in which these services are offered by health care professionals.			
O'Connor et al,1999	To conduct a systematic review of randomised trials of patient decision aids in improving decision making and outcomes	17 studies	Systematic review for RCT's comparing decision aides to controls or alternative interventions.	2 reviewers screened the study	Overall, the review showed that decision aids provide better knowledge of options and outcomes	yes	yes	yes
O'Cathain et al, 2002	To describe the extent to which women perceive they have exercised informed choice	Wales 1386 women	Postal survey concentrating on 8 decision points during their care.	Analysis by SPSS, groups compared using chi-squared for comparisons of proportions. Logistic regression used to adjust differences between different maternity	Large minority of women felt that they had not exercised informed choice throughout their pregnancy. Half felt they had made some informed choice.	yes	yes	yes

				units characteristics in terms of age, educational status, partner's occupational status, ethnicity, parity and preferred decision style.	Good account of the studies limitations			
Nicol, 2007	Article addressing the reasons why many women do not perceive the u/s can to be a diagnostic test	On going doctoral work	Substantial exploration of the situation from a feminist perspective	Not specified	Impossible for women to achieve 'informed choice ' due to medical environment and social pressure	Insufficient information given to answer	Discussion not a question	yes
Gudex et al, 2006	Investigate women's reasons for requesting prenatal u/s in the absence of clinical indications.	Denmark	Postal questionnaire 370 women. Asked to choose out of 12 listed items their three most important reasons for wanting the	Descriptive statistics used for categorical variables.	Specific reasons offered that are influenced by socio demographic, obstetric and attitudinal factors.	yes	yes	Caution as the study was outside of UK population

			scan..					
Green et al, 2004	Review to address questions concerned with knowledge, anxiety and other aspects pf screening.	UK Commissioned by the NHS R& D HTA Programme	Five electronic databases were searched: 78 publications identified relating to antenatal screening		The inadequacy of current procedures for achieving informed consent, the cost of providing a satisfactory service, the unmet needs of false positives, the unmet needs of women's partners, particularly in carrier screening.	yes	yes	yes
Saari-Kemppainen et al, 1990	Study effects of one stage ultrasound screening in pregnancy	Finland 9310 women entered	RCT of systematic one stage ultrasound screening in pregnancy		No differences in number of labour inductions or mean birth weights. Perinatal mortality was significantly	yes	yes	Caution as study population not from the UK

					lower in the screened group due to early detection of major malformations which led to induced abortions.			
Lalor and Devane, 2007	*explore women's experiences of encounters with caregivers after the diagnosis of fetal anomaly at the routine second trimester ultrasound scan*	*in a tertiary referral center in Ireland, were recruited to participate.*	*theoretical perspective of symbolic interactionism guided this study design. A purposive sample of 38 women, at low risk of fetal abnormality, who received a diagnosis of a fetal abnormality*	*An in-depth interview was conducted within 4–6 weeks of the diagnosis. Data were collected between April 2004 and August 2005 and analyzed using the constant comparative method*	*Six categories in relation to women's encounters with caregivers emerged: information sharing, timing of referral, getting to see the expert, describing the anomaly, availability of written information, and continuity of caregiver. Once an anomaly was suspected, women wanted*	*yes*	*yes*	*Caution over the population sampled(in Ireland)*

					information quickly, including prompt referral to the fetal medicine specialist for confirmation of the diagnosis. Supplementary written information was seen as essential to enhance understanding and to assist women in informing significant others. Continuity of caregiver and empathy from staff were valued strongly.			

Skirton and Barr, 2010	to investigate knowledge of screening in both prospective parents and professionals offering screening	UK questionnaires were completed by: (i) pregnant women (n=100) and their partners (n=11), and (ii) midwives involved in offering antenatal screening (n=78).	Cross sectional survey	survey responses were analysed using descriptive statistics and cross-tabulations.	some midwives lack accurate knowledge about screening and the conditions for which screening is offered. Parents wish to have information about screening at an earlier stage and would like the prospective father to be included in screening discussions. There is evidence that many parents do not perceive the second trimester ultrasound	yes	yes	Yes, although caution over the fact that the study was not in the UK

					scan as a method of screening.			
Tyzack and Wallace, 2003	To assess the level of knowledge about Down syndrome screening among a sample of health professionals providing antenatal care.	Melbourne, Australia 140 completed surveys were returned (83% response rate), including 70 from general practitioners, 34 from midwives, 33 from obstetricians and three from geneticists.	A structured, self-administered questionnaire-based survey.	A representative convenience sample of general practitioners (GP) accredited to provide shared antenatal care, midwives, specialist obstetricians and trainee obstetricians was chosen. No method of analysis given	Knowledge of Down syndrome screening was variable among those who regularly counsel women about these tests. The results of the present survey highlight the need for professional education about prenatal screening.	yes	yes	Caution as health professionals outside the UK

Ekelin and Crang-Svalenius, 2004	conceptualise women's and their partners' thoughts and feelings before, during and after the routine ultrasound examination in the second trimester of pregnancy.	22 Swedish mothers and 22 fathers were interviewed in their homes.	GT	Grounded theory (Glaser and Strauss, 1967) was used to analyse the material. All three authors analysed the first eight interviews separately and then comparatively.	U/S extremely important milestone for both parents so the father should be encouraged to participate. It is an important and unique event for both women and men in their process towards becoming parents. This process was largely dependent on the treatment the parents had received during the examination and the information given.	yes	yes	Partially but probably not fully as the study not performed in UK, but some issues were pertinent to all midwives who share information women.
Thornton et al. 1995	Communication of information	1691 women	RCT	SPSS	Women's anxiety over	yes	yes	Yes with caution at the

	about antenatal screening				pregnancy and fetal well-being. Women self reported knowledge and understanding.			date of publish

Appendix 9 Search strategy for the literature review

Three aspects of obstetric ultrasound	Time period	Location of knowledge	Disciplines/authors/databases	Journals	keywords	Inclusion	Exclusion
Growth and Development of obstetric ultrasound	Over last 30 years	Books and Internet historical sites	Prof Stuart Campbell, BMUS, Royal College of Radiologists and College of Radiographers, Physics Institutes. NICE, British Institute of Radiology		Ultrasound, obstetric, development, technology,	Factual and historical	Personal Opinions/future innovation
Women's views of obstetric ultrasound	10 years	SHU literature search facility in Health and Social care under subcategories of Evidence based medicine and nursing and midwifery.	CINAHL (EBSCO), Medline (OVOID and CSA), Cochrane Library, Web of Science, PubMed Central, ScienceDirect (Elesevier), British Nursing Index, AMED, ASSIA, SHU catalogue	Prenat diag, BMUS Bulletin, Birth,Midwifery, Journal of Midwifery and women's health, Ultrasound Obstet and Gynecol, Journal of Ultrasound Medicine, Ultrasound in	Ultrasound, reassurance women's views, expectations, experiences, obstetric, pregnancy, scans and informed choice.	UK, European, Australian, American and Canadian papers	Countries with distinctly different cultures and antenatal practices. Studies focussing on specific abnormalities or receiving bad news from

				Obstetrics and Gynaecology, Prenatal Diagnosis,			scans. Not followed up if no abstract available
Health professionals' views of obstetric ultrasound	10 years	SHU literature search facility in Health and Social care under subcategories of Evidence based medicine and nursing and midwifery.	CINAHL (EBSCO), Medline (OVOID and CSA), Cochrane Library, Web of Science, PubMed Central, ScienceDirect (Elesevier), British Nursing Index, AMED, ASSIA, Mat and Infant Care (OVOID) and SHU catalogue, highwire press Internet websites promoting ultrasound technology	BMJ, Midwifery, Radiography Today, Radiography, Evidence based Midwifery, British Journal of Midwifery	Midwives, scan doctors, obstetricians, medical, perspective, experiences, views, pregnancy, expectations, ultrasonnd, obstetrics, value and application.	UK, European, Australian, American and Canadian papers.	Case studies, College Gnidelines and other quantitative data. Company promotional information.

Appendix 10 'Analytical Framework' formulated during the analysis from transcripts I1 and I2

					INTERVIEW							
Theme	**Index**			**charting groups**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Communication	1	about scanning	1.1		1,4,16,17,20	6,11	18	27	4,22		6	6,18
Counsel		about	1.2		2,6,8,18	12,14,17	14	7	12,13	23		10,11,18,1

ling		screening									9
		offering informed choice	1.3			12,14, 17,18	4,14, 15,16	4,17,18	13,14	27,29		18
Reassurance for doctors	2	doctors' reassurance	2.1		1,1,2 ,4	21,22	4,13		9,21	9,10	3,8, 9,1 8	
reassurance for women		women's reassurance	2.2		1,1,4 ,15	2,3,5,8 ,20	3,4,7, 10,17 ,18		9		3,5, 6,7, 8,9, 20	1,2,1 9
Expectation		bad news	2.3		12	7,8,21, 22,23		20,21,22	17,20,22			
		doctors	2.4									7,8

		reliance on u/s									
Doctor's Knowledge	3	anomaly scan	3.1		2,6,8	13,19,22	14,16	23,25	9,10,18,21	23,26,27	10,11,12	10
		early pregnancy	3.2		1,16		18			7,10,17,28		7
		serial scans	3.3		2,4	10		26		18	4,18	
		doctors' education	3.4		2,4,19,21	3,4	13	15,16,31	5	23	13	17
		doctor's experie	3.5		2,6,12	1,2,3,5,6,8,910,11,12,20,2	1,3,4,5,6,7,8,9,10,14,	1,2,8,9,10,19,20,21,22,27,28,29,31	1,2,3,4,6,7,9,12,13,14,17,20,21	1,4,5,6,9,10,11,13,14,15,16,17,20,21,23,28,30	1,2,3,5,6,7,8,9,	2,3,4,5,6,11,13,14,17

	nce				3	15,16,17,18,20				11, 13, 14	,18,19
	doctor' training	3.6		9,19, 20	12	1,12, 13,19 ,20,21	14,23,31, 33	7,12	2,11,12,13,14,18, 19,20,21,23,30	11, 12, 16, 17	4,5,11,12, 13,14 ,15,16
	doctors' duty to reassure	3.7			9	17,18			28	5	19
Orientation to motherhood	4		4		11		8				
Parental Bonding	5		5		11				15		

Women's Knowledge	6	fear of pregnancy problems	6.1		2	5,6	3,10		8,9	7		
		educational level	6.2			11,23	3		6			
		oversees	6.3				5					
		doctors grades	6.4								14, 15	
Knowledge of Women's Understandi	7	anomaly scan	7.1		2,6,7	20	9	7	8,22			17

ng

fetal sexing	7.2		2		7,8		9			
high risk pregnancy	7.3		4,5						6	
ultrasound capabilities in early preg	7.4		16,18	9						
statistics for women	7.5		1,2,21				20		6	
post/ano	7.6			5					6,8	17

		maly scans									
		pregnancy	7.7			7,8	9,10	7	8	7	8,15
		ultrasound in pregnancy	7.8			10	4,9	4	4	5,27	10,17
		societal pressure	7.9				6		22		7	2
Policy and Protocol	8	anomaly scan	8.1		2,7	14,15	15		13,14		13	
		early pregnancy	8.2		1,16	1,9	18		4	4,9,13,14,17		8

		serial scans/post anomaly	8.3		3	3,10		33			4	
		antenatal pathway	8.4		18	1,6	2,15	4,7	4,13,14	15	3,13,18	
		learning by reading	8.5		19		3,12	13,14	5,6,18	4,24		
		fetal sexing	8.6				8				6	12,19
Statistics	9	anomaly scan	9.1		2							10
		early pregnan	9.2		1,2,22				20			

cy										
better informed by other professionals	9.3		17, 21			11				
evidence based practice	9.4			5		12	18,19			
take up rates for screening	9.5			13,17	4	7				

Women's Desire	10	serial scans	10.1		4			29			3	
		anomaly scan	10.2		6,11	12,13	5	7,19				
		satisfaction	10.3		11	2,3,8,9,20	,4,,9,10	4,19	8,9,15,16	5,6	3,5,6,7,11	2,19
		early pregnancy	10.4		15	9	3		4	5		
		fetal sexing	10.5			13		7			6	
Other Professional Role	11	serial scans	11.1		2				7			

	early pregnancy	11.2		1,17		21		4			
	anomaly scan	11.3		18		14,15		7,12,13		12	
	counselling	11.4			6,23	14,15	7,10		29		
	doctors knowledge of other prof roles	11.5			10,21	14,15,19,21	7,10,24,32	4,6,7,13,22	16,29	12,16	12,14,18
Dictate to women 1 2	anomaly scan	12.1		2						11	

and authority											
	early pregnancy	12.2			9						
	informed choice consideration	12.3			12,23	16	7,17,18	13	26,29		
ultrasound availability	13	early pregnancy	13.1		14,15	2			4	16,17		6
		community perception	13.2		14,15	2,3	6,11					2

on										
over sees	13. 3				7				18, 19	4

Appendix 10b- 'Familiarisation' process, notes from the first analysis of the first and second interviews (I1 and I2). Notes and memos on ideas from first analysis of the first interview (I1)

- Women are hoping for good news.
- Some are expecting the worst and it doesn't come as a big surprise when they cannot see heartbeat.
- The doctor quotes statistics. For example, one in five pregnancies end in miscarriage.
- The doctor was shocked when the situation did not match their quoted statistics.
- The doctors tell the women they are having a 20- week ultrasound scan but they do not go into the detail of what the 20 week ultrasound scan looks for.
- What the ladies want to know is whether they can find out the sex of the baby at that scan.
- The doctor did not know the rate of pickup of abnormality on one of those scans, but felt that if it was high, it will be something that they would have to look at
- The ones that need serial scans, usually that's because there is a problem such as twin pregnancy or something in which case by the time we see them to avoid you realise there is something wrong. So we do not need to deal with the fallout of that
- Many women take the idea of repeated scans as a way of reassuring themselves. And we use the scans for that reason, also, as well as looking for pregnancy loss.
- Women do not want to wait for the planned scans and would rather have more regular scanning, because they think this will be better.
- The doctor appears unclear as to the reasons behind the protocol for serial scanning
- The doctor believes that women think that by seeing the fetus any problem can be picked up.
- The doctor assumes that all women have a 20 week scan, and assumes that all women want the scan when they have talked to them.
- Women have never declined. The 20 week ultrasound scan.
- The doctor thinks that women think that the 20 week anomaly scan is part of the normal antenatal pathway.
- The doctor thinks that the triple test is offered to women and is sometimes declined, but the 20 week anomaly scan is treated as standard practice

- In terms of medical training, the triple test was always taught as an test that is offered, whereas the 20 week anomaly scan appeared to be treated as though it was standard practice.
- The doctor believed that ultrasound is very popular to women in obstetrics.
- They get to see the baby growing
- The doctor thinks that some women see this as a bonding experience.
- The doctor thinks that it helps women orientate themselves to being a mother
- The doctor thinks that the women get a lot of satisfaction from the scan when it is all right.
- The doctor thinks that ultrasound service delivery is very good, in this setting.
- The doctor thinks that the perception in community is that, if you are sent to the hospital with a problem, then you will get scan straightaway.
- The doctor believes that women get angry when they do not get a scan or do not get a scan straightaway.
- The doctor believes that good explanation helps alleviate women's anxiety and anger regarding being denied ultrasound scans straightaway.
- The doctor explains that other professionals take the distress and anger fallout from women before they see them.
- The doctor believes that they are not always first point of contact for women in terms of them being offered ultrasound scans
- The doctor believes there is a lack of support and guidance for medical staff starting work or taking a post in obstetrics and gynaecology at this trust. There is no real formal training in what to expect in terms of supporting women in through their pregnancy. The doctor reiterates that the information may have come from reading up around the subject and watching an occasional scan.
- The doctor believes that some inter-professional support and guidance, in particular around the induction period, would help the medical staff in their new role.
- The doctor felt that more statistics available to them would help them to discuss ultrasound to women in their pregnancy.
- Some doctors have limited training in ultrasound scanning and therefore have more knowledge to impart to women, but some have little or no understanding of ultrasound screening and this variation in the level of knowledge, is not understood by women. They perhaps think that the title of Doctor assumes that they have knowledge ahout the field that they work in.

Notes and memos on ideas from first analysis of the second interview (I2)

- Experienced practice abroad in which routine scanning did not occur (based their dates on their LMP)
- Women signed up for Nuchal scanning to get a scan
- Implied that some women described some symptoms to get a scan
- Some women were willing to pay for a scan
- Implies that having a good relationship with ultrasound staff may provide easy access to scans
- Women want scans for reassurance.
- Women expect a scan to confirm that everything is ok
- Doctor has some knowledge that ultrasound scanning has limitations
- This doctor talked about how fearful women are of pregnancy and in particular labour.
- This doctor believes that women taken their knowledge from other people's experiences and that their fear comes from these.
- Doctors don't get to council each and every woman. They are counselled by midwives and there's no standardisation with that.
- Believes that women are not knowledgeable about pregnancy and the different parts of the care such as ultrasound scanning.
- A lot of women think scan is the ultimate goal standard
- If they've not had a scan then there won't be assessed properly.

- We have to keep in mind the woman's mental state and not just the clinical impression.
- We have a lot of patients who come with preconceived ideas and they think the scans are good and they demand a scan and try and get it but they do try and make it happen.
- The doctor uses the term duty to reassure women.
- Brings in the role of the midwife. Does she criticise the information-giving process?
- but we still, according to guidelines, but we still do growth scans every four weeks and there is no actual need for that, but we still do Dopplers for cholestasis or studies have shown that Doppler has no role in showing whether there is going to be any fetal problems.
- It depends on the education level of the women as to whether they can grasp it and obviously there are time constraints as well. Highlights level of women's education and limited time to talk with women, but even educated people find they don't really understand.
- Doctor describes it as an interesting concept as we were considering asking for permission and that is when I realised that you have got to ask the people whether they want screening, not just tell them that that we screen and that we had to offer them screening.
- Probably some people say no for Down's screening. Similarly, there might be some who don't want a scan, they don't want to know the sex anyway, so there may be some who don't want the scan, but I have not come across such people in this setting, but there are some. But most of the ones that I have asked, "would you like to have a scan" have said yes.
- Sees a flaw in the system within the department's pathway for information giving.
- I do not know how many do understand screening and what we do have to offer and in community (are they counselled in the community?) But did not know the counselling procedure.
- Few people have certain anomalies that can be corrected in -utero but they are far and few so this is not the main focus for screening.
- The main thing is they want to know that everything is okay and everything is okay with the pregnancy. They want reassurance, every time the patient comes to the clinic. Reassurance is the reason for the scan and not to pick up problems. Just to be told that everything is all right.
- This doctor has an experience of ultrasound and could not believe the unfavourable result.
- The doctor's personal encounter with ultrasound has moulded her idea of ultrasound use. From her experience this has given the belief that women should be well prepared for the scans before they opt for them and should have relevant information offered.
- She believes that her experience has made more knowledgeable about ultrasound.

Appendix 11 Charts of data for the five initial topics of discussion

U/S in Early Pregnancy	Interview 1	Interview 2	Interview 3	Interview 4	Interview 5	Interview 6	Interview 7	Interview 8
Women's Expectations	High Expect a scan same day (p4)	High Scans are good Demand a scan Try and make it happen (p9)	Societal pressures Influence what they expect (p6)				Listening to the FH with Sonicaid is not good enough for women now (p7) 'Science has given us so much' (p7)	
What Drives Demand?							Getting a picture (p7) Seeing fetus jumping (p7)	Doctors are ruled by the fact that they can readily have a scan (p6) They are more reliant on U/S (p7) Doctors used to decide who needed a scan now the pathway decides. (p7)
Women's Mental state	Use stats to reassure Women They 'click' with figures (p2,20)	Needs to reassure her, so would request a scan (p9)	Societal Pressure Influences How they Feel And other	Uses Stats as a tool to reassure (p12) doc	Does not quote stats routinely But feels that generalising		Gives the facts and figures and then refers to policy if mum/baby not compromised	

			Peoples experiences Affect their feelings (p6) Believes it is the manner to which they are spoken to that matters (p18) But will scan anyway if women wants reassurance, even when FH heard (p18)	background prepares you for dealing with bad news (p20-22)	helps in emotional situations (p20) rather than hard stats		(p6)	
Women's need For counselling Over U/S capabilities And limitations	Some women after explanation, accept that scan may not change outcome in miscarriage (p16)	Thought education level may contribute to level of understanding, but not on level of accepting that they do not need a scan (p11)						
Care Pathway in EP	Nurses see the women first and 'take the flack' (p20) Women's stress of not getting a scan is dealt with by the nurses (p 17) Doctor was shocked when all				Care pathway made them feel not in control, and felt impersonal Nurses told them when a women needed a scan	Lot of pathways in the handbook (p16,17) A bit of info about early gestation pick up on U/S would be good in induction		Role of junior staff is now more automated than it used to be (p8)

	was not well during a 15 week pregnancy (p17)				'Run of the mill' (p4,22)	(p17) not trying to pick it up as you go along (p17)		
Availability of U/S	Scans generally available on the day for emergency , thinks it is a good service (p14)	Compares here with India and historically only women with bleeding or choosing NT screening would have got a scan in EP (p2) In this setting, it is a good service 'good terms with radiographer'					Historically, women only had U/S once Now much more routine and available (p3) Compare with Europe where women get scanned at every ANC visit (p18) Would like scans instead of FH checks at every visit (p18)	
Significance of U/S to women		women think U/S is the Gold Standard (p8) and if scan fine then nothing else is beyond that without a scan they think they have not be assessed properly (p8)	Women who are bleeding but have positive FH on sonicaid, still demand a scan for reassurance (p17)			More significance than any other test or exam (p5) More important for women to get a scan rather than the words of reassurance (p5)		It is expected that they get a scan and it is classes as the norm (p2)
Doctors	Interview	Interview	Interview	Interview	Interview	Interview	Interview	Interview

perspective on u/s screening	1	2	3	4	5	6	7	8
Evidence Based Practice				From others, rather than reading from the literature? Interviewee (13): yes	Interviewee (18): if you are talking about soft signs or it might be or it might not be, then I would certainly want to know how accurate is this and what are the implications of this result. If it is something definite or if it is more a soft sign then is it implying something...			
Counselling for screening	We don't go in for what we look for though generally (p2) I don't know what the rate of picking up anomaly is but if it was significantly high then it something we should do (p2)	(20): The main thing is they want to know that everything is okay (23).....so it is very important to tell them that this (ultrasound scan) is a test and we are	9): I think they want to know that the baby is well formed, that there is not any major abnormalities. At times I would think, they expect a bit too much, whether they	(4): I think that they don't see it as a choice, they just see it as something that happens and they don't really consider it as something	(12); I think that if I had been asked by a women I was offering ultrasound to , any specific questions, I would have felt quite underequipp			

	it is assumed that everyone will want it I haven't had anybody turn round and say they don't want the scan (p6) the booking bloods, the anatomy scan, they are just sort of standard things like (p8)	going to look for abnormalities, and if the news is bad they will come around, time is a good healer.	understand that it is only the major abnormalities that we are looking at, because they do get a bit upset when we find a minor abnormality like a heart disease they think that ultrasound is some magic machine that if a little finger is not there then it should have been picked up by ultrasound.	that they could choose to have or not. They just think that that is what it is. That's part of the process.	ed.			
Offering informed choice		I worked with a colleague who asked me to ask people what they thought about whether they wanted ultrasound scanning, and this was very interesting as we were offering screening and that was an interesting concept as we	but we just routinely say "your scan will be booked" and I would say that we are not really expecting to explain things to them I don't know whether that's how the system has become then presuming that the midwife has already spoke to them about it.	(7): No, I think that most people would do a little bit of counselling around the 15 week test, I think midwives are a lot better at that, but doctors kind of assume that people are having it, maybe, but I				

		were considering asking for permission and that is when I realised that you have got to ask the people whether they want screening, not just tell them that that we screen and that we had to offer them screening. (p12)	(p14) Would you say that you discuss "informed choice" with women frequently or hardly ever or never? (16): Hardly ever... Laughing Hardly ever, because it is just taken for granted that if they don't want it they come forward and say that they don't want it. But as it is offered routinely they accept it and that is it. That is how it has become.	try to spend a little bit of time saying you do not have to have it, it just gives you a risk, you know it's a choice kind of thing. Whereas, I think the 20 week scan... people don't really consider it, most women probably consider or we are telling them to consider the pros and cons of the 15 week blood test but the 20 week scan probably we view it and they view it as something that just happens. And I think that a lot of women are not aware that it is screening				

				they think it is just to find out the sex I don't think they are always aware of the reason behind the test. If I said to you "informed choice" what does that mean to you? Interviewee (17): Knowing all the information about the different choices so that they are able to evaluate that information and make your own decision. Do you see any slight difference between "informed consent?" Interviewee				

				(18): Yes because for consent, you only have to tell them about one thing and for choice, you have to tell them about, there is an option of not doing it or, so you don't need to necessarily discuss all the options when you are just asking for consent. 19): I know that it is supposed to be an informed choice but I don't really think in reality that the average women realises she has a choice...or maybe they do and they				

				and they are sure that they choose to have an ultrasound. I can't see that, like I said to you before, I have never met or had the experience where someone has said that they do not want the scan. It is normally the other way around where they are desperate to have a scan. And they want more and more scans.				
Anomaly Scan (12.1) and communication	we tell them they are having an anatomy scan at 20 weeks to check the baby is all right. P2 (6) it is never sort of something they can accept or		(14): To be very realistic I don't think we are involved too much in this centre because I think the preliminary talking because they are very confident when		13) Well I think that this is always going to be a difficult situation and I think that is where the first stage of having that meeting with	(23) I don't think there is anything specific that I have been given. The situation has not arisen yet where I have had to counsel	One off training in communication is not good enough for them to be a natural communicator and we are picking up a lot of these cases,	(19): No I do think we (all professionals) try to tell women that ultrasound is not 100% accurate and those they can fail in picking up small or minor abnormalities

	decline. It is always something that you will have the scan, without sort of forcing it on them, it's one of those things like it is assumed that everyone will want it when we talk about it I haven't had anybody turn round and say they don't want the scan.		they come for booking for their anomaly scan. We just say we are just going to look at the general appearance of the baby. We don't really talk in detail to them,		the woman and telling them why they are going for a scan and that's what we are looking for and I think that bit is missing and therefore it makes the explanation all the more difficult because obviously they are going to come back to you with a problem and then you are going to say "well do you know why you were having the scan in the first place" so it's a reverse way of doing things and I think that makes the situation a bit	a woman for a screening test as yet, but I guess that when the situation arises, I will be speaking to one of the registrars to get some information or have a look on the internet, but there has not been any information given to me.	where they have been misinformed or informed in a way that has been misconstrued and we are picking up the pieces and have to see those patients again and reassuring them. P11	

					more difficult.			
Anomaly scan Protocol		: Did you think the ultrasound scan offered at 20 weeks was a screening test? Interviewee (14): Yes, and even here at the radiology department I think they are offered the scan. Even at booking they are supposed to take consent for the blood test. (15): Yes, unless people come out with strong views that they do not want screening and they do not want a scan at 20 weeks. There is along gap between counselling and what you do and what happens and when we actually look at these notes and	(15): As a routine, like today, within antenatal clinic, I didn't discuss it, I saw a few bookings but we just routinely say "your scan will be booked" I don't know whether that's how the system has become then presuming that the midwife has already spoke to them about it.		(14): yeah absolutely, I think personally, I would like to be involved but I appreciate that the sheer numbers is the big issue really and that is the difficulty and that is where it falls down. Ideally we should sit down and have that chat be properly counselled rather than just imply that they, sorry presume that they know why they are going for the scan, which seems to be the case. But I think it is			

		how things go on from there, because if you have not booked a scan then somebody else has and somebody has not seen what you have written because they have not gone through the notes and I can quite understand that the scan could get booked. It has been offered to look for abnormalities in case they want to terminate their pregnancy.			sheer numbers and that is the realistic problem that is the scenario.			
Anomaly scan statistics	I don't know what the rate of picking up anomaly is , but if it was significantly high then maybe that it something we should do. (p2) like it is assumed that everyone will want it when we talk about it I							To be an obstetrician they will realise that nothing is perfect and they will realise that 1 in 40 (isn't it) abnormalities are missed at the 20 week scan. (p10)

	haven't had anybody turn round and say they don't want the scan. (p6)							
Take up rates For screening	(7)Yes, now, I do think that they see it as part of the antenatal pathway. The triple test is always something that is looked at as being offered but the as I said the booking bloods, the anatomy scan, they are just sort of standard things like (p8)	Yes, as I do occasionally get a woman who declines the test when I explain it to her. (17): I am not entirely surprised, I must admit, because I can understand why this is happening, because coming in, I do not know how many do understand screening and what we do have to offer and in community (are they counselled in the community) (18): I am unsure, if women have said no, why they would be reoffered a scan	4) They would have thought about it or come forward for it, but it is up to us to explain to them what options they have and it is up to them to choose and it does make a difference, some of them, for religious reasons, like, I worked in the middle east, they wouldn't want any invasive testing, come what may because, what ever happens to the baby, they will not want to do anything about it and for them it is God's gift,					

		in the clinic. Sometimes they get it arranged in the community.						
Other professional role		(14): Yes, and even here at the radiology department I think they are offered the scan. Even at booking they are supposed to take consent for the blood test				(29)I don't think it necessarily matters who offers it, a lot of antenatal care is midwife led and I think that the doctor and the midwife, midwives have more of an important role in relationships with the patient than the doctor, so I don't think it matters who offers the screening tests.		, I would probably get the screening co coordinator to come and talk to them one Wednesday. That is what I used to do but I do not think that is being done now and that is what I do with my juniors, take them thought cases.
Counselling and other professional's role	the first point of contact is always the midwife and I imagine that if there's getting there if they have any bursting questions, which could well relate to the anatomy scan then they will fire them at	6): That causes more problems but, unfortunately we, I don't get to council each and every woman. They get counselled by midwives. And there is no standardisation		(7): No, I think that most people would do a little bit of counselling around the 15 week test, I think midwives are a lot better at that, but		(29) I don't think it necessarily matters who offers it, a lot of antenatal care is midwife led and I think that the doctor and the midwife, midwives have more of an		

	the midwife. (p18)	with that. (14)....I must really think that the midwife is doing it and she is booking the ultrasound scan. We don't talk much about it.		doctors kind of assume that people are having it, maybe, (10)..You see, most of the time when I see them, they have already been seen. First by a midwife at home and then probably by a midwife in antenatal clinic and most of the time I either see documented that this has been discussed or maybe I have presumed wrongly that this has been discussed and that my role is probably, in that short space of time that I have that's		important role in relationships with the patient than the doctor, so I don't think it matters who offers the screening tests.		

				probably different so we don't spend much time discussing it with them.				
Doctors Grades							Do you think the women can identify the differences in doctor grades? (14):I think nowadays, most of the clinics have the names and the women actually know who the consultant is but whether they actually know the difference in the knowledge in the different grades, I do not know whether they are clear about that. (15):It is important because I think most of the clinics try to impart that	

							information and the people with their ranks, but also women are doing a lot of homework so a lot of them they know who they are seeing. They might not differentiate between an SHO and a registrar but hey might differentiate between a consultant and other grades.	
Anomaly scan And Doctors knowledge				How much knowledge would you say you have of ultrasound screening? Interviewee (23): Probably not as much as what I would probably like (laughs) I think that is an area that I am addressing in my revision	(8): I think that is quite a difficult question really, I think the scans that I did see women were quite passive and laid there, you know and asked if everything was alright...yes... alright then can I have	(27): I do not know, I think it will depend on the lady but I think generally the woman expects the doctor to have at least some understanding of everything that happens when they come into hospital. What	(10):Yes, more or less the key point is what we see as structural abnormalities, we cannot see the function in general. (11):No, the reason because most of the juniors have not gone through the training of communicating	(10): I think that depends on how much involvement they have in obstetrics. I think a very new SHO may think that an anomaly scan is 100% and would little knowledge if obs and gynaecology is part of their rotation I am not sure how many will know anything about

				for my part two. It is actually, I supposed most, I have worked in areas in district hospitals, but I have worked for 18months at a fetal medicine unit and that is probably where you see most anomalies and things... (p23) so I think actually it is an area of my training , fetal anomalies that I haven't had much exposure to, because it is always creamed off into the specialist area and we just work as a general dogs body in the	some pictures. So I guess I learnt that they were looking for a bit of reassurance, but I got back to that perhaps implied thing that you kind of assume women know why they are having the scan and you assume that they are assuming that it is all going to be fine Do you feel there is value in seeing another perspective? Interviewee (22) Absolutely, I was actually surprised at how much more you can see and I thought it	information do you get with regard to foetal screening, either from the university training or from your induction? Interviewee (23):I don't think there is anything specific that I have been given. The situation has not arisen yet where I have had to counsel a woman for a screening test as yet, but I guess that when the situation arises, , but there has not been any information given to me. (26): Well I think that any test that you are sending a patient for, you need to have an	of having not been trained and this comes with time. One off training in communication is not good enough for them to be a natural communicator and we are picking up a lot of these cases, where they have been misinformed or informed in a way that has been misconstrued and we are picking up the pieces and have to see those patients again and reassuring them. I think that is absolutely a must and I think a part of the complications for juniors in training is the	Nuchal translucency so they may know Kypros stats which are based on high risk women but I do not know how much they may know about normals. (11): Well, they have a bit of information given to them through their induction then in clinic when new patients come though and are requesting invasive tests or want to know a bit more about nuchal or are over 35 then if they have not got experience in talking to women before, then I would speak to the women and I would expect them to listen really and then I also encourage them to attend a Friday morning clinic and hear our screening co

				antenatal unit. So you don't get to see that much which is a shame really. (p23) Would you be able to give a reasonable account? Interviewee (25): Yes	was much more limited than it is so...(p9) I think that if I had been asked by a women I was offering ultrasound to , any specific questions, I would have felt quite underequipped. I (p11) I found the time that I spent, in the ultrasound unit extremely useful. It was a real eye opener and it generated a lot of thoughts which gave me a lot more understanding (p21)	understand and be able to answer their questions, be able to counsel them on the test and explain outcomes	need for juniors they should be observing... and see when you are doing a 20 week scan, when you start, what you say and what you say after. That could be part and parcel of his or her knowledge and then give them our explanation. (p12)	coordinators. if they are going to be obstetricians then they ought to understand the limitations of scans and there are green top guidelines, consensus reports from the college that they should be aware of, but yes I would like to think that they are more a ware but I could not vouch for it. (17): I think if they have had some training then yes they do realise what hopes women have when they come for a scan. I think it has improved.

What Doctors want From Ultrasound	Interview 1	Interview 2	Interview 3	Interview 4	Interview 5	Interview 6	Interview 7	Interview 8
Reassurance	bit of a shock then, because you are quite reassured by your figures, (p1) 90% figure is something they click with at least if I get to this that stage, and I'm sort of out of the woods (p2) (4).many would take repeated scans as a way of reassuring themselves that everything is all right as essentially it is because we use	(21)..we got our AFP and it was raised . I went berserk, I could not believe it and we watched the baby about a hundred times and we went again for another scan and this time I was more prepared, (22)..And then we had Doppler abnormalities (absent end diastolic traces) and I made the doctor do the Doppler three times or even four times and	(3)..It's just for reassurance because being a medical personnel, you just want to make sure because we do not know the implications of Down's and wanted to make sure that everything was fine and it was very reassuring when we got our results from the amniocentesis *(doctors own personal experience)* Do you think that being a doctor and a mother increases the amount of reassurance that you are looking for compared to the		speaking on behalf of my partner, going in there you just want to know that everything is alright,	(9).. I don't know I know there is sometimes there's difficulties with any investigation and you don't always get all the information that you need... .. from the sort of induction and from teaching from registrar's and SHOs you know if we are seeing for example, one of those early pregnancy bleeds or something and betas are above a thousand and then you should get the information you want from the	(3)..lot of my clinical colleagues have started doing a lot of extra scanning in the second and third trimester Just the feeling of moving, does not always confirm that everything is fine, so the perception is a recap. (p8) (9)..I think that there is nothing as low risk in my sense because a low risk is only a low risk when you rule out high risks (18).I am looking forward to one day when everyone will	

	them for that as well is because we use them for that as well, to ensure the growth is right, for stuff like previous pregnancy loss. (p3)	even before the section So I was in denial so I wouldn't accept the scan, I thought it was wrong and they were not interpreting it correctly, they were wrong. P21) There is no risk of growth restriction, but we still, according to guidelines, but we still do growth scans every four weeks and there is no actual need for that, but we still do Dopplers for cholestasis	women. (4).. I would think probably because we are looking for more probably the patients do not understand as much as we need to, we are probably looking more into it,			scans (10)..Yeah, I mean, I do understand that sometimes there are difficulties, you know, that's medicine really	have some sort of scan rather than the foetal heart monitoring or the fetal heart listening rather than just have a scan, a quick one	
Reliance		So.... we tell the patient, it is more of the negative result, rather than trying to pick up things.	I would say that I think the same thing applies although all patients are not medical personnel, but what applies				(5)..I think most women desire a scan and their eyes flicker when you say they are going to have a scan and some of	(7): Most definitely more reliance now , however we would

		(p10)	to us does apply to anybody. (p3) (10)their expectations are getting more and more, they need that, science has advanced and they think that you should know everything. if they haven't heard the foetal heart, I say to do a scan on her, I may not book a formal scan but I may reassure her by showing her on the scan. (p18)				them even demand on grounds that are not scientifically founded. (6)..We are finding a lot of these women are going to the private sector to get the scans done Look at the services in some of the areas such as the private service; they do have a third trimester scan. (p20)	examine them before they went on for their scans and we would reduce the number of patients requiring the scan. But nowadays there was a proforma filled in by the nurse, they are all scanned, the viables go off and the doctors examine the others. (p1): I think, on the whole women find it reassuring, but I try not to offer a scan too soon y... I expect they are probably reassured. (p2): Well I think by seeing a foetal heart beat or that

								they have got a cyst, having some reassurance, it's what they see on the scan. Unfortunately I think this day and age it's expected isn't it. (p2) but I think the expectations are already there and I do not think any of us can erode their expectations.(p19)
Education	(8)..The triple test is always something that is looked at as being offered but the anatomy scan, they are just sort of standard things like (9)..The bloods were always taught as a	(3)Scan has got its limitations the only one thing that can save the baby's life is a biophysical profile which we don't do anyway here. because all the teachings have been that they	(13): ultrasound to new staff I would say is the same as the patient in that they would think you see anything and everything, they don't understand the limitations of ultrasound scan they would expect	(14).. I am training for my part two exam so I am reading a lot like the college guidelines about early pregnancy	(5).there's not much taught at all at university about ultrasound scanning in any field let alone obstetrics			(17): if they have had some training then yes they do realise what hopes women have when they come for a scan.

	screening test, but the anatomy scan always did seem part of the antenatal care plan . (21)Yes, I do think that inter professional discussion will be useful, perhaps at the induction day, And because I am quite a big fan on figures and knowing what you can pick up, what percentage of pickup would be useful as well for when one is picked up we could say that you are just unlucky, I always found that if you are able to access figures, they seem more accepting, I don't know	can not correctly estimate the growth. If for a big baby the scan is usually not very accurate anyway. We tend to go more by my clinical estimate, but we get asked to scan (p4)	it to kind of rely too much on ultrasound and if ultrasound has not picked it up then it is not out there. They properly do not understand the function and limitations of ultrasound. (p13)					

	why.(p21)							
Duty to reassure	but she did not want to wait four weeks for the scan to check everything was all right and I wonder whether we need to reiterate that four weeks is enough and it will not make any difference by scanning every week (p3) I think many would take repeated scans as though a way of reassuring themselves that everything is all right... (p4)	, if the patient is not happy and requires reassuring that it does not serve the purpose of her coming to us, if we cannot reassure her. (p9) If someone comes to you for reassurance, and her mental state it would be right for me to put myself in her place (p9) So.... we tell the patient, it is more of the negative result, rather than trying to pick up things. (p10) (5)..They hear a lot of stories. And people do worry a lot. (9)..we have to	Interviewee (17): Yes I have come across this situation. I would say that many a time that when they are bleeding and it is a threatened miscarriage and she is not bleeding a lot and we have found the fetal heart and they still want the reassurance of the ultrasound scan, we have declined. (18): I think it is the manner to which we explain it to them. We say that they have heard the fetal heart and you don't need it then they are reassured and they agree, otherwise if they haven't heard the foetal heart, I say to do a scan on her, I may not book a formal scan but I may reassure			Have you ever had to say to a woman, I don't know? (28)..Well yes and in general practice, it is said quite regularly as a rule	(5)..The request I get to go to room seven and scan is increasing and some of them even demand on grounds that are not scientifically founded. (p5) (20): When we quantify our care, no but what is good care to someone else is not necessarily good care in terms of improving outcome, but that it is good that we keep the mental side and keep some one calm and that is good, but how do you quantify that? I am not saying scan at every visit but perhaps an interim scan sometimes will enlighten some of the mothers.	(19)..in an ideal world I think we could all each time spend 2 minutes saying at booking, at the dating please do not rely on the scan, but unfortunately , especially now the private scans are available, they still have the same, women still have the same expectations about scans if not more now

		keep in mind the woman's mental state and not just the clinical impression . (20): The main thing is they want to know that everything is okay. They want reassurance, every clinic appointment	her by showing her on the scan.					
Serial/ post Anomaly protocol		(3)..some people say baby's not moving or something else, and then they're expecting to have a scan to confirm every thing is, is ok.					if you see our protocol, abnormal liver function tests do a growth scan, cholestasis in pregnancy, then do a growth scan, it doesn't have anything to say that growth is restricted, but has become our practice. That is our practice and that is what I do. (p4)	
Reassurance for Women in high risk	repeated scans as a way of reassuring women that everything is	The one thing that can save a baby's life is a biophysical profile. Liquor		increasing scan parameters and Dopplers and things			(6)a lot of these women are going to the private sector to get the scans done and	

	all right as essentially it is because we use them for that as well, (p4) (5)..The thing is that in their view they can see everything is alright on the scan and any problem can be picked up there.	volume and actual measurements doesn't say anything if the baby is going to be compromised in a week (p5)		are going to become more part of day to day doctors practice, more kind of general ways of monitoring the fetus. (p33)			are happy, probably if this goes on we might have to give them the choice, this is what we offer, if you want anything more... probably they will have to pay for them themselves.	
Serial scans	Classes Twin pregnancy as a problem Women know we are requesting the serial scans they know something is wrong, so we are not really having to deal with the fallout of that I think it looks as if it's high risk I don't think they do expect a problem and I think many			(26): It means monitoring growth by repeating scans over a period of time (27): If I decided that is what she needed then I would always explain why, after taking a history and identifying any risks with the woman (p28): I guess			, any medical diseases like if you see our protocol, abnormal liver function tests do a growth scan, cholestasis in pregnancy, then do a growth scan, it doesn't have anything to say that growth is restricted, but has become our practice. That is our practice and that is what I do. (p4) (18): Spain and France, I think most women in each	

	would take repeated scans as though a way of reassuring themselves that everything is all right as essentially it is because we use them for that as well, (p4)			occasionally, some women request less scans, especially if already have a few children and don't want to keep coming up so often. (p29): I think people often ask for more scans, when they come in, but I do not know how much of that is put in their heads already because sometimes they get sent up again for small for dates when they are already having serial growth scans and it is in the interim.			visit get a reassuring scan and perhaps because the NHS is free, it is difficult to offer here , What I am looking forward to one day when everyone will have some sort of scan rather than the foetal heart monitoring	
Experience/ training	Much training? (19)No, when I started, I started with another			(15).. We had several placements. What training?		What foetal screening info in induction? (23).Nothing specific that I	Any training given to New starts about screening? (13):No, the reason because	

	Registrar, we were given a gynaecology handbook, but the information about obstetrics is sadly lacking.			(16): It's hard to remember, because your experience is cumulative and you only remember the more recent bits. I can't remember it being a major part; I don't even think I even saw an ultrasound as a medical student, not even if I watched one being performed... probably not. (33)..was that a lot of them were taught by other people by doctors, who haven't had organised training		have been given. The situation has not arisen yet where I have had to counsel a woman for a screening test as yet, but I guess that when the situation arises, I will be speaking to one of the registrars to get some information. I think scenarios often help; it helps to get your head round it a bit more, when you think of a sort of real life situation rather than just somebody lecturing you. (p19)	they only see the abnormal results, they do not see the low risk and the abnormal results usually goes to a senior person or a consultant	
Learning through reading	(p19)No, when I started, I started with another		I definitely volunteered and went for a Nuchal translucency, we	From others, rather than reading from	but you absorb from reading literature such as nice antenatal	or have a look on the internet (p23)		

	Registrar, we were given a gynaecology handbook, but the information about obstetrics is sadly lacking. You sort of read up, on the job... it is only through reading around the subject that and really watching a scan		had read about it (p3) How have you gained your knowledge of ultrasound use? (12): From studying ultrasound at postgraduate level and from reading a lot about it.	the literature? (13): Yes (14): Well at the moment I am training for my part two exam so I am reading a lot (laughs out loud here), like the college guidelines about early pregnancy and all that	guidelines and you should be scanning and learning about what's going to happen and EPAU the job before you offer a scan (p5) (6): I did quite a lot of reading and preparing for the job, it has become clear that there is a larger role than I thought and I guess that's the difference I think, between reading and personal experience and professional learning,	So you think you will have to source some information for yourself. Interviewee (24): yes		

Women's beliefs and expectations	**Interview 1**	**Interview 2**	**Interview 3**	**Interview 4**	**Interview 5**	**Interview 6**	**Interview 7**	**Interview 8**
Women's satisfaction (10.3)	Very satisfied See the fruit of their belly growing (p11) Helps them bond (p11)	Unhappy if not scanned (p9) Unsatisfied if not had a scan they have not been	Think should know everything from scan So dissatisfied if cannot totally reassure (p10)		Women were quite passive and Just laid there (scan) (p8) Satisfied when news	Satisfied if offered a scan, more than any other test or exam or information offered (p5)		

	When it goes right they are satisfied	assessed properly (p8) Overseas, some dissatisfied if didn't sign up of screening as not scanned (p2)	Overseas satisfied if you showed baby was alive (p4)		was good and could take a picture home (p15)			
Community perception/ ultrasound availability	the ones who are sent in with bleeding they tend to come in, not all of them, but some of them are told that they will be scanned that day, and they seem quite angry when they you explain to them that this is not how it works. P15	lot of women think scan is the ultimate goal standard, and that is it. If the scan is absolutely fine there is nothing else beyond that and the other way also is if they've not had a scan then there won't be assessed properly. (p8)	because I have left (overseas)haven't been there for ten to fifteen years I do not know exactly what happens in the setting, but when I was working there we did not have this routine anatomy scan but I am sure it probably will have come into the centre there by now ,but it was only available in private p6 .Because it is more common place then their expectations go up (p11)					So I think it has become the norm but it is not always a good thing. P2
Fear of pregnancy problems (6.1)	threatened miscarriage pause I think in that situation that the women are hoping for good news but some are expecting the worst and it	Scan has got its limitations its, as you very well know, I mean. Only, the only one thing that can save the baby's look is a biophysical profile	being a medical personnel, you just want to make sure because we do not know the implications of Downs and wanted to make	quite difficult really to reassure them, if they have got a history.	say that the general assumption is that women are going to come in and have a normal scan and everything is going to be alright and hunky dory and the scan is			

	doesn't come to a big surprise when they go down and the scan does not show heartbeat,(p2)	which we don't do anyway here. Liquor volume and the actual measurements of the baby doesn't say anything if the baby is going to be compromised in a week.p3 (5); definitely if the baby is too big they will not be able to have a normal natural delivery. They feel that they will have problems if the baby is too big, and they have a fear of the labour, actual labour. They do have a fear. I think a lot of women actual fear labour from what of the stories they've heard that the baby was turned the opposite way or you know, the position was, was a bit different and err. They hear a lot of stories. And people do worry a lot. don't want an epidural because they think I will	sure that everything was fine and it was very reassuring when we got our results from the amniocentesis. I would say that I think the same thing applies although all patients are not medical personnel, but what applies to us does apply to anybody. (p3) 10): I would say that their expectations are getting more and more, they need that, science has advanced and they think that you should know everything.	(p29)	just to confirm that everything is alright and that is the general feeling that I get. (p8) I think as a parent and speaking on behalf of my partner, going in there you just want to know that everything is alright, maybe have a little look at what sex it is and get the pictures, (p9)			

		have no control and I will end up with a caesarean. Or something, something really as bizarre where I will, I will end up with back problems forever and I can't believe they have such misconceptions about things and, and a lot of them don't under-estimate the amount of pain they are about to go through, or under-estimate the problems that can happen. (p6)						
Fetal sexing protocol			But in India it was they were very particular especially if they had had a previous female child because it would lead them to go for a termination. And in India now it has been banned, sex determination is banned. (p8)					but they are and I think it is a shame that we can now tell them the sex of their babies, personally, I think it would be better if we didn't. (p19)
Women's knowledge of pregnancy		(7)..It is lack of understanding that's the main thing, and, and not	(9).. I think they want to know that the baby is well formed, that there	20 week scan probably we view it	know a lot more than before I had that viewing session, so I think there are	I think ultrasound scans are part of the routine, pregnancy, you know,	where they have been misinformed or informed	(19)....but I do not think we have the time and in an ideal

		understanding how much things can go wrong	is not any major abnormalities. At times I would think, they expect a bit too much, whether they understand that it is only the major abnormalities that we are looking at, because they do get a bit upset when we find a minor abnormality like a heart disease they think that ultrasound is some magic machine that if a little finger is not there then it should have been picked up by ultrasound.	and they view it as something that just happens. And I think that a lot of women are not aware that it is screening they think it is just to find out the sex I don't think they are always aware of the reason behind the test. (p7)	different expectations now from being a medic as compared to being a woman. (p9)	monitoring umm and sometimes they get the pictures they can take home and show family and friends and things, so from that point of view they think that its just a sort of normal thing (p7)	in a way that has been misconstrued and we are picking up the pieces and have to see those patients again and reassuring them.p11 (15):It is important because I think most of the clinics try to impart that information and the people with their ranks, but also women are doing a lot of homework so a lot of them they know who they are seeing. They might not differentiate between an SHO and a registrar but hey might differentiate between a consultant and other	world I think we could all each time spend 2 minutes saying at booking, at the dating please do not rely on the scan, but unfortunately, especially now the private scans are available, they still have the same, women still have the same expectations about scans if not more now. Well I would like them not to be so reliant on them

							grades.	
Women's desire for serial scans (10.1)	she was having four weekly scans and as it was getting toward the time that she had a stillbirth and the Caesarean delivery, she was getting rather nervous, but she did not want to wait four weeks for the scan to check everything was all right (p4)		(10).. I would say that their expectations are getting more and more, they need that, science has advanced and they think that you should know everything.	Do you ever get women who ask to be scanned more times than what you suggest? (29): I think people often ask, when they come in, but I do not know how much of that is put in their heads already because sometimes they get sent up for small for dates when they are already having serial growth scans and it is in the interim			some of them even demand on grounds that are not scientifically founded. P5 We are finding a lot of these women are going to the private sector to get the scans done p6 the patient, they desire more frequent scanning and a lot of my clinical colleagues have started doing a lot of extra scanning in the second and third trimester either to identify structural early problems or for foetal assessments. (p3)	
Women's desire for anomaly scan (10.2)	, does anyone ever say they do not want that scan? (6)..No but when I tell them about it, it	(13).. Yes, I think it's routine. Probably some of them don't want it. Probably I don't			So I guess I learnt that they were looking for a bit of reassurance, but I got back to that perhaps implied thing			

	is never sort of something they can accept or decline. It is always something that you will have the scan, without sort of forcing it on them, it's one of those things like it is assumed 11)..Yes, very much so, I believe so, I think. So yes, because it offers them as their bellies growing and they're getting movement, they actually get to see the baby growing and I think some of them see it as a bonding experience as well, though. It helps them to orientate themselves to the fact that they're going to be a mother. (p11)	know. Probably some people say no for Down's screening. Similarly, there might be some who don't want a scan, they don't want to know the sex anyway, so there may be some who don't want the scan, but I have not come across such people in this setting, but there are some But I am certain there will be people who don't want scan at 20 weeks (p13)			that you kind of assume women know why they are having the scan and you assume that they are assuming that it is all going to be fine (p8) the general assumption is that women are going to come in and have a normal scan and everything is going to be alright and hunky dory and the scan is just to confirm that everything is alright and that is the general feeling that I get after a quick look they ask if everything is alright, yeah is looking okay, then can I have some pictures (p8)			
Women's desire in early pregnancy (10.4)	(15)In early pregnancy, the ones who are sent in with bleeding they tend to come in, not all of them, but some of them are told that they will be scanned that day, and they seem quite angry when	(9)..We have a lot of patients who come with preconceived ideas, and they think the scans are good and they demand a scan and try and get it but they do try and make it happen,			(4)..I think it is perceived as women presume they're going to be getting the scan	(5)..I think for the women its probably got more of a sort of significance than a blood test or something, especially if they get shown the pictures and they can see the baby		I think if we just examined them and said "yes the uterus feels twelve weeks, you can have your scan next week" women would be quite upset

	they you explain to them that this is not how it works.	but we do, avoid this is as much as possible, although sometimes we have to give in						Well I would like them not to be so reliant on them, but they are p19
Fetal sexing (7.2) and Women's desire for fetal sexing (10.5)	We don't go in for what we look for though generally, what the ladies want to know is will they be able to find out the sex of the baby at that scan.(p2)	there might be some who don't want a scan, they don't want to know the sex anyway, so there may be some who don't want the scan, (p13)	(8): I still think that everybody basically, any woman who walks into an antenatal clinic wants two things. I would say probably may want to know male or female but not as much but, why they want to know male or female is very different as to why they want to know male or female there. From India and the Middle East they ask for that particular thing because they want a male. Probably for people who live around here, it is not for that, it is just for them to be mentally prepared for the baby, probably that is the reason. (7) Yes, at the time, however it might have changed now, but	7)..And I think that a lot of women are not aware that it is screening they think it is just to find out the sex I don't think they are always aware of the reason behind the test.	I think as a parent and speaking on behalf of my partner, going in there you just want to know that everything is alright, maybe have a little look at what sex it is (p9)		We are finding a lot of these women are going to the private sector to get the scans done and are happy, probably if this goes on we might have to give them the choice, this is what we offer, if you want anything more, want know the sex of the baby at eighteen weeks or see other features of the baby and have another scan, probably they will have to pay for them themselves (p6)	

			in the Middle East there was no screening as such offered, we would just do an ultrasound for reassurance at the clinic and look for the foetal heart and telling them that it is a male or a female. That is the two things that they want.					
Educational level (6.2)		(11): It depends on the education level of the women as to whether they can grasp it and obviously there are time constraints as well. (23) I think as a patient, I would be better prepared now after having our experience.	It's just for reassurance because being a medical personnel, you just want to make sure because we do not know the implications of Downs and wanted to make sure that everything was fine and it was very reassuring when we got our results from the amniocentesis. I would say that I think the same thing applies although all patients are not medical personnel, but what applies to us does apply to anybody. (p3)		(6)..I have friends and colleagues who are all having babies and who are going through the process of ante natal's, some are having infertility treatment with ultrasound monitoring of foetal growth, so there are a lot of personal experiences as well as professional experience,			
Post/anomaly		They hear a lot of					We are	

scans (7.6)		stories. And people do worry a lot. What they don't understand is interfering will cause more problems than, than just a big baby (p5)					finding a lot of these women are going to the private sector to get the scans done and are happy, probably if this goes on we might have to give them the choice, this is what we offer, if you want anything more, want know the sex of the baby at eighteen weeks or see other features of the baby and have another scan, probably they will have to pay for them themselves. (p6)	

Doctors	**Interview**	**Interview**	**Interview**	**Interview**	**Interview**	**Interview**	**Interview**	**Interview**

experience	1	2	3	4	5	6	7	8
Overseas		so people who had a scan were happy and going home and the other people were not happy and if they didn't sign up for a scan anyway they didn't have a scan if they didn't sign up for the NT trial.(p2)	past, no screening but scan to show FH and gender (p7) and wanted no invasive societal pressure felt over here (p6)				In Spain and France, women get a reassuring scan every visit (p18)	
Training	(9)The bloods were always taught as a screening test, but the anatomy scan always did seem part of the antenatal care plan as you can see so much on it (19) No, when I started, I started with another Registrar, we were given a gynaecology handbook, but the information	(10) There is no risk of growth restriction, but we still, according to guidelines, but we still do growth scans every four weeks and there is no actual need for that, but we still do Doppler's for Cholestasis or studies have shown that Doppler has no role in showing whether there is going to be any foetal problems, but we still do it.	(19): I would think that anybody who comes into the unit..... a refresher for those there might be a few things that I am missing or I worked in the unit I still do not talk about to them. But if I was given a reminder then I would talk about it and I would find a regular	(14): Well at the moment I am training for my part two exam so I am reading a lot... like the college guidelines about early pregnancy and all that. 23): Probably not as much as what I would probably like (laughs) I think that is an area that I am addressing in my revision for my part two		as you meet a situation, you are learning on the spot. (18): Yeah (11):No, to be honest, the induction was a lot more medical legal things rather than anything actually useful to practice case of read the handbook that has information in it than actually get to	(12):I think that is absolutely a must and I think a part of the complications for juniors in training is the need for juniors they should be observing. They have a handbook where we compile information, general information about the hospital, Trust policies, like infection control, antibiotics, hand over, annual	some support from other professionals like the screening co coordinators and a very small amount of help from the induction process. (12): Yes, but I do not think that it is enough There has been loads of discussion *(about mandatory training)* but

	about obstetrics is sadly lacking. . You sort of read up, on the job. You see a couple and you do your own reflect back, but there is no formal training		refresher perhaps about every 6 months about what we need to discuss or tell the patient and what is the right thing to tell the patient. This would let the new comers know and told about what the limitations are (20): We do sometimes have a special postgraduate meeting every Wednesday. One of the few topics, the high risk topics and once in a while we do have antenatal screening ..			proper teaching and guidance. We did have sort of did a starting days where we were on call with an SHO who has been here longer and we rely on them (p11) any other professional input into your induction, in terms of ultrasound in pregnancy?. Interviewee (16): Not particularly, no, it was quite a limited induction really What information do you get with regard to foetal screening, from the university	leave. These are the information and we need to populate these handbooks more. At the moment, I think we get information from specialist like yourself (p12) (17):I think that is important in a way because we have induction, but to draw a balance between service delivery and induction, in terms of counselling women for screening in ultrasound? (13):No, the reason because they only see the abnormal results, they only see the low risk and the abnormal results usually goes to a senior person or a consultant	it's all a question of having dedicated time and we are all mindful of service provision. So it has been discussed but I do not think it has been satisfactorily sorted. (11): ...if they have not got experience in talking to women before, then I would speak to the women and I would expect them to listen really and then I also encourage them to attend a Friday morning clinic and hear our screening co coordinators

			but I would probably think it is once a year.			training (23)I don't think there is anything specific that I have been given.		
Experience, professional		when I was practising in the north of the country, I worked with a colleague who asked me to ask people what they thought about whether they wanted ultrasound scanning, and this was very interesting as we were offering screening and that was an interesting concept as we were considering asking for permission (p12) demand a scan and try and get it but they do try and make it happen, but we	(17): Yes I have come across this situation. I would say that many a time that when they are bleeding and it is a threatened miscarriage and she is not bleeding a lot and we have found the foetal heart and they still want the reassurance of the ultrasound scan, we have declined.	(12) Probably listening to other people doing it when I was more junior *(where they got their stats from)* about 4 and a half years in obs and gynae (p1) How much experience would you say that you have had in dealing with bad news? (20): A minuscule amount. Would you say this unit	someone suggested I popped round to watch the scan (p7) (6):I think it has become, from recent meeting and preparing for the job, it has become clear that there is a larger role than I thought and I guess that's the difference I think, between reading and personal experience and professional learning, having had a fairly normal pregnancy, with my daughter and having a couple of scans and that's it. I	(17): as a sort of relative newcomer to the department I'm quite unfamiliar really with even the sort of regime for the routine scanning Is ultrasound in the timetable? (20):I don't think it's routinely in the timetable but it would be something interesting if we had some spare time. It is lack of *(women's)* understanding	(11): No, the reason because most of the juniors have not gone through the training of communicating of having not been trained and this comes with time. One off training in communication is not good enough for them to be a natural communicator and we are picking up a lot of these cases, where they have been misinformed or informed in a way that has been misconstrued and we are picking up the pieces and have to see those	fellowship exams (membership) and does that incorporate an ultrasound scanning module? (13): Yes, but it never used to. ..and has that become more of a mandatory requirement? (14): When I did ultrasound training, there was not a mandatory ultrasound module but I had already scanned and had got myself interested and

		do, avoid this is as much as possible, although sometimes we have to give in (p9)		prepares you well for that? (21): Prepares me well? Well I guess we come here at this stage already having done a fair amount of breaking bad news and things and we apply the kind of skills that we get taught quite early on and you get used to doing it when you are a junior when you have to tell relatives that someone has died..... .. but I would not really say that that is a need at the moment.	knew what they were looking for, or rather I knew a little bit about what they were looking for, but I didn't appreciate just how much and in how much detail the scanning is,..... (p9)before I had any obs and gynae experience, there are different perceptions and certain expectations...yeah I think as a parent and speaking on behalf of my partner, going in there you just want to know that everything is alright, maybe have a little look at what sex it is and get the pictures, but then I think as a professional and seen what you can actually do, my expectations will have changed from what you can	that's the main thing, and, and not understanding how much things can go wrong	patients again and reassuring them. 3): the patient, they desire more frequent scanning and to add to that a lot of my clinical colleagues have started doing a lot of extra scanning in the second and third trimester The request I get to go to room seven and scan is increasing, that is to lessen the pressure on you but yes I think most women desire a scan and their eyes flicker when you say they are going to have a scan and some of them even demand on grounds that are not scientifically founded. (p5)	I just put in the hours..... I think the important thing in early pregnancy is to examine and really document and be clear about the state whether the cervix is open or closed. If it is open then I would not offer a scan and that is recommended teaching.... .(p6) I think they do rely on the scans now whereas we had to rely more on the examinations (p6)

					get from that. Have you experienced a situation when the outcome is not good? (17): Not in, well with the exception of EP assessment with missed miscarriages and that			
Experience, personal	I am not really sure how to say what their thoughts about ultrasound would be, obviously they are in floods of tears about the ultrasound result, because they have lost pregnancy, but I have never actually seen or been in the ultrasound department or seen a scan when the scan	we were raised risk of spina bifida. I went berserk, I could not believe it and we watched the baby about a hundred times and we went again for another scan and this time I was more prepared, I was waiting, I was thinking I am a doctor ,and if I was not prepared why should I expect any one else to be prepared. (22): Yes, absolutely. The			I have friends and colleagues who are all having babies and who are going through the process of ante natals, some are having infertility treatment with ultrasound monitoring of foetal growth, so there are a lot of personal experiences as well as professional experience, but there again professional experience has not been particularly taught (p4)		(7): Basically, when I was young, we used to keep a picture of when we were first born. Now they want to keep a picture from inter utero situation and second thing is that I think there are a lot of demands where women want to be reassured and by listening to the foetal heart by sonic aid is not good enough in the present day when science has given us so much.	

	has been put on and the baby has not been alive (p6)	first was always a scan of our baby, I was not prepared for there being anything wrong, the first time.						
Opinions	it offers them as their bellies growing and they're getting movement, they actually get to see the baby growing and I think some of them see it as a bonding experience as well, though. It helps them to orientate themselves to the fact that they're going to be a mother.(p11) what the ladies want to know is will they be able to find out the sex of the baby at that scan	feeling in this region has been that most of the time we are on very good terms with the radiographer.(p2) (23): It has changed it a bit in the sense that, because I was not expecting things to go wrong, when we had the tests, it just hit me that things are not normal, I couldn't accept it and from that point I feel that people should be prepared before they go for the tests, (7): They are not prepared for bad news from a scan	All women want to know two things Baby is okay and the sex but the latter, different reasons (p8)	There are difficulties with getting training and teaching and a lot, one of the things that came out of it, was that a lot of them were taught by other people who were doctors, who haven't been properly trained, (p33)	12); I think that if I had been asked by a women I was offering ultrasound to, any specific questions, I would have felt quite under equipped.	Do you think there may be some value in watching the type of tests that you are requesting? (21):Most definitely (30):At the moment I am just going through that phase where I don't know the questions that I need to be asking until I encounter them in the clinical setting at the end of the six months I may be able to tell you things that may be useful to know at the start of the six	Understands ove seas is financed differently (p19) I think that the demand for ultrasound scanning has grown and has been growing form both the professional and the users.(p3) You can actually see something now and this is amazing to see the foetal heart and see the foetus jumping around, it is amazing. (p7)	Presentations scans obviously, liquor volume and at a push placental localisation. But my worry would be that some of them, and I know this, because I know what patients have been told, are not that experienced, but think they are. (p14) I think they (junior staff) are ruled by the fact that they can request a scan. (p6)

	it's one of those things like it is assumed that everyone will want it when we talk about it I haven't had anybody turn round and say they don't want the scan. (p6)					months.		

Appendix 12 Table of participants interviewed

Participants	Grade	Ultrasonnd Qualification	Working experience abroad (mainland Enrope, Middle East and Indian continent)
1	Registrar	None	No
2	SHO/ new Registrar	Basic (mandatory u/s training)	Yes
3	Staff Grade	Basic (mandatory u/s training)	Yes
4	Experienced Registrar	Basic and undergoing Intermediate u/s training	No
5	Registrar	None	No
6	SHO	None	No
7	Consultant	No qualification but has experience scanning	Yes
8	Consultant	Obstetric Ultrasound qualifications	No
*9	Senior fellow	Obstetric ultrasound qualifications	No

Appendix 13 Transcripts

Transcription of the Tape Recording of Interview (I1)

- The number in the brackets refers to the response paragraph or sentence
- Researcher/interviewers memos are added in bold text

Researcher (1)
What I would like you to do is to describe your experiences of offering ultrasound scanning to pregnant women, whilst you have been working here or discussing ultrasound to pregnant women in this field with stories you have to tell or incidents that you feel you would like to talk about.

Interviewee (1)
I guess the most frequent time I got involved in offering ultrasound to pregnant women will be when I'm doing gynaecology on call and when we get early pregnancy, bleeding, and we want to rule out threatened miscarriage **long pause, appears to be reliving experiences**. I think in that situation that the women are hoping for good news but some are expecting the worst and it doesn't come as a big surprise when they go down and the scan does not show heartbeat, or shows an empty womb **another pause**. In that situation, we tell them that one in five pregnancies, early pregnancy ends in miscarriage **appears to move from relating to an emotional time to offer scientific information (social to medical thinking)**. We quote figures to ladies in that situation, we tell them that 1 in 5 early pregnancies end in miscarriage but we also tell them another thing that if that first ultrasound shows fetal heart is a 90% chance that the pregnancy will be fine after that. And that is almost always been my experience when working there, apart from one case where a lady had had a normal scan, midwife had tried to listen with sonicaid in the community and had not heard anything at 14 weeks and thought it was too early. So she listened at 15 weeks and couldn't hear anything, so sent her in. So I rang the department, someone nicely offered to scan her, and so I thought it would be a case of just not being able to hear with the sonicaid, but they had actually lost the baby then. So that was a bit of a shock then **a shock felt by him**, because you are quite reassured by your figures, I don't know whether they are the same ones you hear?
He raises a question here, almost looking for reassurance of his practice by me. This gives the impression of medical model thinking. I try to answer him but not lead the interview, although it is difficult here as he is clearly looking for reassurance. Decide to ask about his use of statistics.

Researcher (2)
We tend not to base things on figures when we are scanning, it is what will be is what will be. We don't tend to give figures out. Do you feel that figures help?
Interviewee (2)
Yeah, yeah, I do, I think yeah, especially a 90% figure is something they click with at least if I get to this that stage, and I'm sort of out of the woods a little bit. **It almost feels like his examination. He feels pressured.** I don't know whether this makes sense.
With regards to sort of antenatal scanning. When we see new patients in ante natal clinic we tell them they've not been checked for booking scan. They got a viable pregnancy that might be 11 plus three, whatever, we tell them they are having an anatomy scan at 20 weeks to check the baby is all right. **Picking up on the wording used, that women are told they are having 20 week scan, not that they are offered**. We don't go in for what we look for though generally, what the ladies want to know is will they be able to find out the sex of the baby at that scan. **No mention of what the scan entails or that it is a screening test and requires consent.** I don't know what the rate of picking up anomaly is on one of those scans, but if it was significantly high then maybe that it something we should do. **Appears to have no knowledge about the fetal anomaly screening tests, but interestingly, feels he should know if anything shows up on it.** The discussion would be quite detailed and look for any problems, but that is obviously something that is about having an anatomy scan at 20 weeks. **He appears to have an idea that it is a detailed look at the fetus.** The ones that need serial scans, usually that's because there is a problem or a problem such as twin pregnancy or something like that or reduced liquor, in which case by the time we see them and you know, were requesting the serial scans they know something is wrong, so we are not really having to deal with the fallout of that. **Gives the impression here that a multiple pregnancy is classed as a problem and rates them the same as actual problems highlighted during growth scans.**
Researcher (3)
Do you feel that we obviously class some ladies as high risk in terms of multiple pregnancy but doesn't indicate always that there is a problem but they are at risk of having a problem.
Interviewee (3)
Yes.
Researcher (4)
What you think that has on women? Do you think they feel high risk and that they understand that meaning, or do you think that they or do you think that they think there is going to be a problem.
Interviewee (4)
I think it looks as if it's high risk I don't think they do expect a problem and I think many would take repeated scans as though a way of reassuring themselves that everything is all right as essentially it is because we use them for that as well, to ensure the growth is right, for stuff like previous pregnancy loss. **Complicated statement, appears to believe that doctors use serial scans both to follow a pregnancy with problems and also follow pregnancies that have not got a problem but that may have a problem later, so therefore provide reassurance.**
With the patient that came here yesterday, that had had an IUGR, had a stillbirth, next pregnancy had IUGR and a Caesarean. So this lady was having serial scans just to look at the growth and this time it was thankfully normal, but speaking to her, she was having four

weekly scans and as it was getting toward the time that she had a stillbirth and the Caesarean delivery, she was getting rather nervous, but she did not want to wait four weeks for the scan to check everything was all right and I wonder whether we need to reiterate that four weeks is enough and it will not make any difference for monitoring every week with the scan. **Appears to have knowledge about effective intervals needed for scanning for fetal wellbeing.**

Research (5)

Do you think that women think that the scans help the outcome to be better? Rather than seeing what the outcome is

Interviewee(5)

Yeah, I do, I think this circumstance, the Caesarean was done based on the scan, it was absent Dopplers, severe IUGR and went straight to theatre. The thing is that in their view they can see everything is alright on the scan and any problem can be picked up there. **Thinks women have high expectations of scans.**

Researcher (6)

When you approach the topic of an anatomy scan, with the women who arrive in clinic after having their dating scan, and you say the next scan is a 20 week scan, does anyone ever say they do not want that scan?

Interviewee (6)

No but when I tell them about it, it is never sort of something they can accept or decline. **He does not imply that women should choose to opt into fetal anomaly screening.** It is always something that you will have the scan, without sort of forcing it on them, it's one of those things like it is assumed that everyone will want it when we talk about it I haven't had anybody turn round and say they don't want the scan.

Researcher (7)

Yes, so from your position, you feel that you think that the women think that it is something you have in pregnancy routinely rather than it being something that you are offered.

Interviewee (7)

Yes, now, I do think that they see it as part of the antenatal pathway. **He thinks women see it as part of the antenatal pathway**

Researcher (8)

Yes, like bloods or measurement of the fundal height. All of those things you think...

Interviewee (8)

The triple test is always something that is looked at as being offered but the as I said the booking bloods, the anatomy scan, they are just sort of standard things like. **Does not see that both the Down's testing and the fetal anomaly scan are screening tests, only Down's testing is a screening test that women may wish to op into. Matter of fact. Taught this.**

Researcher (9)

In your teaching are or what you were taught in your obstetric area. Do you feel that's the way that you are taught, to appreciate it that way. Or were you taught that the anatomy scan, and the bloods at 15 weeks are two screening tests?

Interviewee (9)

The bloods were always taught as a screening test, but the anatomy scan always did seem part of the antenatal care plan as you can see so much on it, and it's something that they can have.

Researcher (10)

Okay,

In your experience do you think ultrasound scanning in obstetrics is popular?

Interviewee (10)

With staff or the women?

Researcher (11)

Women

Interviewee (11)

Yes, very much so, I believe so, I think. So yes, because it offers them as their bellies growing and they're getting movement, they actually get to see the baby growing and I think some of them see it as a bonding experience as well, though. It helps them to orientate themselves to the fact that they're going to be a mother. Yes they do seem to get quite a lot of satisfaction, when it goes, when everything is all right, they get a lot of satisfaction out of it. **Appears to now consider the 20 week scan as a social experience rather than a clinical test**

Researcher (12)

Could you turn that round now and give me any experience of when it doesn't go all right. How do you think the women perceive ultrasound when they have had a negative experience or a traumatic experience, have you had to deal with anything like that?

Interviewee (12)

Yes, when I spoke about the one that found that they had a normal scan and then a few weeks later, the baby died in utero , (erm) I am not really sure how to say what their thoughts about ultrasound would be, obviously they are in floods of tears about the ultrasound result, because they have lost pregnancy, but I have never actually seen or been in the ultrasound department or seen a scan when the scan has been put on and the baby has not been alive. I am sorry; I have not had .....pause **Had no words to add**

Research (13)

So you have had not had that experience, that's fine.

In your experience, you've had half of the year or 6months experience working in the department.

Interviewee (13)

This is month number four.

Researcher (14)

Explain what women and their families get out of having an ultrasound service on their doorstep, in terms of this hospital, we can offer ultrasound straight away, if necessary. What do you think women and their families get from this service, just explain what you think, do you think women are getting a good service?

Interviewee (14)
Yes, whenever I have been on call and we have needed an emergency ultrasound, there has been one available, for example, query ectopic or stuff, or the emergency on-call obstetric want to make sure something is still alive, and when they have come in, and it needed a scan then they have only had to wait a couple of days and I think this is a very good service. I do think though that the perception in the community, is that, if you get sent to the hospital, you get scan straight away, especially if it is the GP referral, the patients are told that they will get a scan that day. **Has an opinion on women's/societies expectation of ultrasound services**
Researcher (15)
Is there any area where you work that that happens like that here?
Do you notice whether it is in early pregnancy or late in pregnancy?
Interviewee (15)
In early pregnancy, the ones who are sent in with bleeding they tend to come in, not all of them, but some of them are told that they will be scanned that day, and they seem quite angry when they you explain to them that this is not how it works. **Has experience of women's expectation**
Researcher (16)
How difficult is that, to talk to these women in this situation, do you have to then discuss and explain the reasons why and is this difficult?

Interviewee (16)
Yes, we tell them what the management will be and when you have explained it to them some of them are quite accepting, but the cold hard truth of it is, if you're just thinking it is a threatened miscarriage, it makes no difference whether you scan them on the same day or the day after and I guess if you put this to them in nice terms, some of them are all right with it.
Researcher (17)
Is it difficult to find those right words?
Interviewee (17)
Usually what happens is, when they come in, the nurses see them first and they will say to the nurses when am I getting my scan and the nurse will explain that it doesn't happen like that, so by the time we come round to see them they have kinda got into their minds that they are not getting a scan, it is then so much easier to talk to them. The nurses bear the brunt of that (small laugh). **Brings in the role of other professionals in the early pregnancy pathway, I ask about routine antenatal pathway**
Researcher (18)
Do you think that happens in a few cases in obstetrics in terms of the anatomy scan, possible that others have begun the discussion process before the women see the medical staff?
Interviewee (18)
Yes, I definitely think that is true, and the first point of contact is always the midwife and I imagine that if there's getting there if they have any bursting questions, which could well relate to the anatomy scan then they will fire them at the midwife. Yes. **Strong reply and body language seems to suggest that this is not his role but a midwives duty.**
researcher (19)
Would you say that during your training, before coming into the department in obstetrics? do you feel you have had any training in that aspect, in the initial meetings with women who are seeking obstetric care? Do you get lots of training, in that aspect in your medical training?
Interviewee (19)
No, when I started, I started with another Registrar, we were given a gynaecology handbook, but the information about obstetrics is sadly lacking. You sort of read up, on the job. You see a couple and you do your own reflect back, but there is no formal training for what to expect for example, the anatomy scan, it is only through reading around the subject that and really watching a scan..... **Appears to have not received much information about ultrasound scanning and screening.**
Researcher (20)
And I suppose you learn by each experience you have Interviewee agrees and mould how you speak to each woman Interviewee agrees and how you approach a subject Interviewee agrees and adds the word definitely rather than having any professional support and discussion before.
Interviewee (20)
Yes, that's fair enough; that is how it is.
Researcher (21)
Last question, do you think from a medical perspective, that type of discussion or input, before entering the department or in the early stages in the department, would be helpful? Some inter professional discussion and debate about such subjects like informed choice, do you think there is anything in that/
Interviewee (21)
Yes, I do think that will be useful, perhaps at the induction day, like the lecture from the breast-feeding midwife, maybe something more useful like, someone like yourself, giving a lecture on what you see on ultrasound, such as what sort of defects you are likely to pick up would be quite useful but is generally when we are speaking to ladies. **Seeking factual/stats information,** and because I am quite a big fan on figures **(medical model thinking)** and knowing what you can pick up, what percentage of pickup would be useful as well for when one is picked up we could say that you are just unlucky, I always found that if you are able to access figures, they seem more accepting, I don't know why.
Researcher (22)
You think women like a number to cling to.
Interviewee(22)
yes, yes.
Researcher (23)

Thank you, before we finish is there anything else you want to add to all talk about.
Interviewee(23)
No, thank you

Transcription of the Tape Recording of Interview (I2)

- The number in the brackets refers to the response paragraph or sentence
- Researcher/interviewer's memos are added in bold text
- Problem with the recording instrument, distorted some words occasionally (shown by the word underlined)

Researcher: I just want you to describe your experience of offering ultrasound scanning to women.
Interviewee (1):
In India, when I practiced, we would not have a dating scan for everybody, actually so everybody did not have an ultrasound scan when they came in. **This doctor has experience of not offering ultrasound routinely to all women.** The first scan, they were doing a project. They were doing the nuchal scan. All of the trial women were having the nuchal scan and everything. At first they used to come to the clinic for booking in it at 13 weeks and 14 weeks and they didn't have a scan. It was only based on the dates.
Researcher: On their period dates?
Interviewee (2): On the period dates. So that was a very difficult experience because people who would come in saying that I am 12 weeks or 13 weeks pregnant they would usually get people at 13 weeks. And then if they signed up for this trial they would go on to have a scan, so some would have a scan or don't have a scan, so people who had a scan were happy and going home and the other people were not happy and if they didn't sign up for a scan anyway they didn't have a scan if they didn't sign up for the trial. On some occasions they've come and said oh well I've had some bleeding and then I would have had to send them up for a scan **the practice appears to be to scan when there is a clinical indication of a possible threatened miscarriage, otherwise women routinely did not have a dating scan, unless they chose to opt into the trial they were running.** and they, a lot of them actually went privately and had a scan for a nuchal. **This doctor implies that some women wanted a scan and were willing to pay for the scan.** Pregnant women with an antenatal date would they would have **?...?**. umm, after all of that then I started work in Scotland were it was relatively easy to get scans because it was a small unit . **The doctor thinks that the system is different in Britain especially by the fact that any woman with an antenatal clinic appointment get scans in their pregnancy**. I haven't worked in any big units. My feeling in this region has been that most of the time we are on very good terms with the radiographer. **She implies that a good relationship with other professionals may account for easy accessibility of scans.**
Researcher: No that's fine. Describe your experience of offering scanning to women.
Interviewee (3): Offering scanning, now women think that, **pauses but needs to think how to explain how she feels as English is not her first language**, they can sometimes I mean I've seen women coming back they want a scan for reassurance. Most of the time they want it just for reassurance, **compelling use of the term reassurance** some people come back to us saying the baby's not moving or something else, umm, and then they're expecting to have a scan to confirm every thing is ok. Scan has got its limitations its, as you very well know, **Clearly has knowledge that scans have limitations** I mean. Only, the only one thing that can save the baby's look is a biophysical profile which we don't do anyway here. Liquor volume and the actual measurements of the baby doesn't say anything if the baby is going to be compromised in a weeks **time**
Information that we get from a scan, if that is not clear then that's it, there's nothing we can do. but sometimes we do end up feeling like for instance, if somebody comes in with decreased movements, 2 or 3 times, we do tend to offer them a scan. After 2 or 3 episodes because then it becomes a point were err, because you know, if something goes wrong then they, you know, you, you do feel that ok this lady, sometimes with decreased movements, there must be something else.
Researcher: yes
Interviewee (4): I **know** because all the teachings have been that they cannot correctly estimate err, the growth. If, for a big baby the scan is usually not very accurate anyway. We tend to go more by my clinical estimate but a lot of time we get a scan.
Researcher: Where do you think **their worry** comes from?
Interviewee (5); definitely if the baby is too big they will not be able to have a normal natural delivery. They feel that they will have problems if the baby is too big, and they have a fear of the labour, actual labour. They do have a fear. I think a lot of women actual fear labour from what of the stories they've heard that the baby was turned the opposite way or you know, the position was, was a bit different and err. They hear a lot of stories. And people do worry a lot. **This doctor believes that women taken their knowledge from other people's experiences and that their fear comes from these.** What they don't understand is interfering will cause more problems than, than just a big baby because big baby by itself, if everything goes normally being with big babies because I have done instrumental deliveries for 5kg babies, 5000grams come out normally naturally without any problems. So sometimes it's not the actual size it's the fact that you interfering with something that you don't need to.
Researcher: yes
Interviewee (6): That causes more problems but, unfortunately we, I don't get to council each and every woman. They get counselled by midwives. And there is no standardisation with that. I mean, I have seen people come here to labour suites saying that this is not probably what the scan would probably be making of it, like, because there is people come in and say well I don't want an epidural because they think I will have no control and I will end up with a caesarean. Or something, something really as bizarre where I will, I will end up with back problems forever and I can't do that or something, something like that. I mean, I can't believe they have such misconceptions about things and, and a lot of them don't under-estimate the amount of pain they are about to go through, or under-estimate the problems that can happen. (I mean obstetrics is pretty straight forward if things happen normally naturally. But, for things to become abnormally takes only a fleeting moment to, for things to change. I mean one minute the baby could be fine, everything is normal, second minute if the heartbeat goes down you that they will be having to be monitored. They are going to have instrumental. It is lack of understanding that's the main thing, and, and not understanding how much things can go wrong. **Much of this statement refers to other events in**

pregnancy but perhaps this doctor believes that women are not knowledgeable about pregnancy and the different parts of the care such as ultrasound scanning.
Researcher: I know
Interviewee (7): They are not prepared for it.
Researcher: I know **doctor looking for acknowledgment from me**
Interviewee (8): And then your not prepared for it, you don't accept it as easily. **Is the doctor reliving her experience?** with respect to scan I think a lot of women think scan is the ultimate goal standard, and that is it. If the scan is absolutely fine there is nothing else beyond that and the other way also is if they've not had a scan then there won't be assessed properly.
Researcher: do you think that is the same for women in early pregnancy?
Interviewee (9): In early pregnancy I don't think, I mean we, we don't have people coming in probably, like for instance; they have had a scan at 12 weeks and they come back at 14 weeks, with some pain, and they want to know if the baby is okay. Sometimes we do offer, if they've had a previous miscarriage, then you may book a repeat scan, but probably wouldn't have if the woman wasn't as worried. But a lot of times, we have to keep in mind the woman's mental state and not just the clinical impression. Even if we've listened to the baby **listened with the sonicaid to the fetal heart** the clinical impressions are normal and we would elevate if there was anything like a small baby or something. But we wouldn't be doing anything, so clinically we know and I know and I can reassure the patient. We have a lot of patients who come with preconceived ideas, **see if I can see what she means** and they think the scans are good and they demand a scan and try and get it but they do try and make it happen, but we do, avoid this is as much as possible, although sometimes we have to give in. However, if the patient is not happy and requires reassuring that it does not serve the purpose of her coming to us, if we cannot reassure her. **Implying that women may exaggerate their symptoms or try and manipulate the system to get a scan**If someone comes to you for reassurance, and her mental state it would be right for me to put myself in her place and think that if I were her and I went to the doctor and I'm not happy. Then I would as a doctor. I would feel that my duty would be to offer her a scan. **The doctor uses the term duty**
Researcher: Is anything else you want to add in terms of when you offer ultrasound to them. Obviously, the women have initially been seen by other professionals but putting yourself in your medical role, what is your experience here?
Interviewee (10): I don't think they quite understand what we will see in the ultrasound scan. I don't think the midwives that she goes into the detail. **Brings in the role of the midwife. Does she criticise the information-giving process?** What is actually going to be expected to see when they have a scan or a Doppler. I don't think, I mean, most of them do but sometimes for instance. They are sending someone for cholestasis someone who, we send for growth scans that we still not sure what they are looking for because, because technically cholestasis, there is not known problems in cholestasis. There is no risk of growth restriction, but we still, according to guidelines, but we still do growth scans every four weeks and there is no actual need for that, but we still do Dopplers for cholestasis or studies have shown that Doppler has no role in showing whether there is going to be any fetal problems, but we still do it. So.... we tell the patient, it is more of the negative result, rather than trying to pick up things. We try to exclude things, so we try to exclude growth restriction. **Again mentioning the use of ultrasound to try and eliminate things- which is really what a screening test is for, to try and find conditions when there are no symptoms** We try to exclude other things rather than find things. **This paragraph is talking about third trimester scanning for growth and wellbeing of the fetus, not fetal anomaly screening.**
Researcher: Is that a good way to explain things to women?
Interviewee (11): It depends on the education level of the women as to whether they can grasp it and obviously there are time constraints as well. **Highlights level of women's education and limited time to talk with women** And sometimes you are trying to explain that I like to do that and some do understand. And a lot of people do not understand, but even educated people find they don't really understand. The lady a few weeks ago had a dating scan in the same situation, and she did not have any previous miscarriages. The guy is a GP, but he could not understand that because we had heard the fetal heart we did not require another scan**. Does this point to the idea that doctors value ultrasound very highly, higher than other tests or clinical skills?** He struggled to understand that we felt it was all clear. **Gives an example that implies the opposite to the point raised by about the level of education and expectation from ultrasound.**
Researcher: How do you feel from your medical perspective
Interviewee (12): It is very interesting that you asked me that, when I was practising in the north of the country, I worked with a colleague who asked me to ask people what they thought about whether they wanted ultrasound scanning, and this was very interesting as we were offering screening and that was an interesting concept as we were considering asking for permission and that is when I realised that you have got to ask the people whether they want screening, not just tell them that that we screen and that we had to offer them screening. **This doctor is now aware that 20 week scan is a screening test and women need to opt into it** I realised here, when I did my scanning sessions that you ask them "Will it be okay" and I picked up from that that routinely women are asked whether they want screening and most think that they will have scans at 20 weeks anyway. And that has changed.
Researcher: Do you think it (20 week scan) is expected?
Interviewee (13): Yes, I think it's routine. Probably some of them don't want it. Probably I don't know. Probably some people say no for Down's screening. Similarly, there might be some who don't want a scan, they don't want to know the sex anyway, so there may be some who don't want the scan, but I have not come across such people in this setting, but there are some. But most of the ones that I have asked, "would you like to have a scan" have said yes. But I am certain there will be people who don't want scan at 20 weeks **Appears to believe that some women may not want scans but do not voice this opinion.**
Researcher: Did you think the ultrasound scan offered at 20 weeks was a screening test?
Interviewee (14): Yes, and even here at the radiology department I think they are offered the scan. Even at booking they are supposed to take consent for the blood test.
Researcher: Yes we can see in the green hand held notes that some women decline the screening test that is a blood test around 15 weeks and you would say that is accepted by staff that the women may decline this test.
Interviewee (15): Yes, unless people come out with strong views that they do not want screening and they do not want a scan at 20 weeks. There is along gap between counselling and what you do and what happens and when we actually look at these notes and how

things go on from there, because if you have not booked a scan then somebody else has and somebody has not seen what you have written because they have not gone through the notes and I can quite understand that the scan could get booked. **Sees a flaw in the system**

Researcher: So it is not surprising to you that the take up rate is 100%

Interviewee (16): Do you mean even if people are declining it?

Researcher: Yes, as I do occasionally get a woman who declines the test when I explain it to her.

Interviewee (17): I am not entirely surprised, I must admit, because I can understand why this is happening, because coming in, I do not know how many do understand screening and what we do have to offer and in community (are they counselled in the community) **But did not know the counselling procedure.**

Researcher: Yes, by the community midwife

Interviewee (18): I am unsure, if women have said no, why they would be reoffered a scan in the clinic. Sometimes they get it arranged in the community.

Researcher: Do you think that women (who have initially declined) may think it is a good thing to have when the staff in the clinic, have spoken to them about having a scan.

Interviewee (19): It has been offered to look for abnormalities in case they want to terminate their pregnancy. Few people have certain anomalies that can be corrected in –utero but they are far and few so this is not the main focus for screening.

Researcher: Do you think they are coming with other reasons for having the scan.

Interviewee (20): The main thing is they want to know that everything is okay and everything is okay with the pregnancy. They want reassurance, every time the patient comes to the clinic and sometimes we see people saying that I have had pain for one week , they come on a Sunday night and we ask them to return on Monday morning and they think they have not been assessed, they want to stay on the ward and be told that everything is alright and they want the checks to be done and the statement from you that everything is alright., so most of them are looking for reassurance really rather than trying to pick up anything. So that is the expectation they come with. **Reassurance is the reason for the scan and not to pick up problems. Just to be told that everything is all right.**

Researcher: Do you think they are prepared if the news isn't good?

Interviewee (21): By the time they come to me, it is already been explained. But we had our scan at about 16weeks and we were waiting for the spina bifida test. That evening we got our AFP figure back and it was raised and we were raised risk of spina bifida. I went berserk, I could not believe it **this doctor has an experience of ultrasound and could not believe the result** and we watched the baby about a hundred times and we went again for another scan and this time I was more prepared, I was waiting, I was thinking I am a doctor and if I was not prepared why should I expect any one else to be prepared.

Researcher: Did you see the second ultrasound examination as more of a test?

Interviewee (22): Yes, absolutely. The first was always a scan of our baby, I was not prepared for there being anything wrong, the first time. And after that, actually, I should tell you that, the next time we had our scan was at 28 weeks but again we were not expecting to be told there was anything wrong, **why do they think they are having a scan** and she said that your baby's growth is below the 3 rd centile, so we were not expecting that and I was in denial, I said "it can't be" there must be something wrong (with the way you have measured) but it was true. And then we had Doppler abnormalities (absent end diastolic traces) and I made the doctor do the Doppler three times or even four times and even before the section I said "could you please look again and she said it was reverse now). So I was in denial so I wouldn't accept the scan, I thought it was wrong and they were not interpreting it correctly, they were wrong. **Did not accept the tests findings**

Researcher: Do you think your experience in pregnancy has changed the way you view your role, do you think it has enhanced it?

Interviewee (23): It has changed it a bit in the sense that, because I was not expecting things to go wrong, when we had the tests, it just hit me that things are not normal , I couldn't accept it and from that point I feel that people should be prepared before they go for the tests, whether it is a Down syndrome screening or the 20 week ultrasound anomaly screening, I think it is very, very important that we debrief them to tell them that times 1% chance that this baby, they don't expect it and it hits them on the face and that is very difficult to accept and I didn't. I found it extremely difficult and the second time, actually, I had raised Down syndrome and in spite of knowing that I still went, so it is very important to tell them that this (ultrasound scan) is a test and we are going to look for abnormalities, and if the news is bad they will come around, time is a good healer. I think as a patient, I would be better prepared now after having our experience. Our experience told me that when we had the growth problems, it was just a routine scan, an incidental scan, well we didn't need to have the scan, but we just had a scan and they found we had growth problems. **From her experience this has given the belief that women should be well prepared for the scans before they opt for them and should have relevant information offered.**
She believes that her experience has made more knowledgeable about ultrasound.

Transcription of the Tape Recording of Interview (I3)

- The number in the brackets refers to the response paragraph or sentence
- Researcher/interviewer's memos are added in bold text

Interviewee (1): I am a doctor here and I am a staff grade. I have had over 20 years of experience in obstetric and have worked in India. I have had about 6 years experience working in the Middle East, and I have been here about six years working. **Mixed experience of obstetric practice**

Interviewee (2): With regard to screening in pregnant women, I mean to start with, I will start with myself. I am a mother of two children (the doctor laughs). I would think that since the services have been unpacked. I had my first child, about 18 years ago, and at that time we did not have routine, I am from India, we did not have routine screening in pregnancy, and it was just routine antenatal checks and I did not go for an ultrasound scan. Until, I mean, I did not have it at all, all through my pregnancy because it was not routinely offered at that time. **Reiterated the previous doctors comments about ultrasound not offered in pregnancy n her work abroad.**

Interviewee (3): Since having working in obstetrics, and having our second pregnancy 10 years after the first, everything had changed. When we were having our second pregnancy, I was about 39, and at that time, I think, I was working in Obs and Gynae and I knew what was happening. I definitely volunteered and went for a Nuchal translucency, we had read about it and it was only done in specialised centres, but I did go for it, because I knew about the implications of having a pregnancy at 39 and I went for a diagnostic and although I had had a nuchal screening, I still went in for an amniocentesis. **Sounds like she was not happy to accept the Down's screening result, so chose the diagnostic test as well, therefore, why have Down's screening** So I had an amniocentesis and between 16 and 18 weeks. It's just for reassurance because being a medical personnel, you just want to make sure because we do not know the implications of Downs and wanted to make sure that everything was fine and it was very reassuring when we got our results from the amniocentesis. I would say that I think the same thing applies although all patients are not medical personnel, but what applies to us does apply to anybody. **This doctor believes that both doctors and women have same need for reassurance, but probably doctors need more reassurance because of what they already know.**

Researcher:

Do you think that being a doctor and a mother increases the amount of reassurance that you are looking for compared to the women.

Interviewee (4): I would think probably because we are looking for more probably the patients do not understand as much as we need to, we are probably looking more into it, but I would say, I was not too over cautious, but that I was being practical. As patients, as lay persons, they may not know the implications so if they are told or explained the implications, I am sure they would opt for the same things as I did. They would have thought about it or come forward for it, but it is up to us to explain to them **This doctor believes that informed decision making is important** what options they have and it is up to them to choose and it does make a difference, some of them, for religious reasons, like, I worked in the middle east, they wouldn't want any invasive testing, come what may because, what ever happens to the baby, they will not want to do anything about it and for them it is God's gift, so there is no part, I think, when we talk about screening, they should be able to understand the implications of it, but not necessarily saying they should go for a termination or treatment, but come what may they really, it is immaterial to them. What happens in the Middle East, offering screening, we may talk about it but all the patient's wants is reassurance that the baby is well formed. They don't really worry about if there is anything abnormal they don't really think about and if there is then they accept it. We used to run an antenatal clinic which had an ultrasound machine and they used to scan about 200 patients from the ultrasound scan but we did have to kind of show them a fetal heart, all that mattered to them was that the baby was alive. **Women from the Middle East just wanted to know whether the baby was alive**

Researcher:

Do you think that is similar in terms of people who may have been brought up in the Middle East but now live in an area where they will attend a clinic similar to this setting. Do you think they have the same wishes or come with the same ideas?

Interviewee (5): I think there is a slight difference from people who come, the kind of people I have seen here who have come from the Middle East, nowadays people are getting a bit more educated about it, they seem to know what the view in my experience there and here, they seem to know about it and they are willing to accept that if there is a problem or anything abnormal then something needs doing, they are coming forwards to it. But the kind of population we have, means that 90% wouldn't care about it, would think that, although they are not from the same background, still I think, the level of knowledge, probably the kind of people who come here, it is very different to the background that I use to see across the sea. **Thinks that women who settle over here may require more from the fetal screening tests.**

Do you think society has a ....

Interviewee (6): I would think that, yes, society has a pressure. I think that it does matter and the people they talk to. They are getting more and more information and they talk to people who have had previous experience and everything changes as it is not only their experience but also what they hear from others. They aren't, I would say the same population from what I have come across, like in India I would see people who because it was not a routine, I am not sure because I have left haven't been there for ten to fifteen years I do not know exactly what happens in the setting, but when I was working there we did not have this routine anatomy scan but I am sure it probably will have come into the centre there by now, but it was only available in private so I would think that. **This doctor gives the impression that she believes that women from oversees are changing how they view antenatal care, including ultrasound and that their needs are changing.**

Researcher:

One of the questions that I have asked is "have you experienced working in an area where ultrasound facilities have not been on the doorstep" and it sounds like India...

Interviewee (7): Yes, at the time, however it might have changed now, but in the Middle East there was no screening as such offered, we would just do an ultrasound for reassurance at the clinic and look for the fetal heart and telling them that it is a male or a female. That is the two things that they want. The foetal heart is there. Once the fetal heart is there then whether it is a boy or it is a girl. **This doctor explains that the two requirements women from the Middle East used to request was to check whether the baby was alive and its gender.**

Researcher:

Now, thinking about this setting, do you think there are any differences when women come for ultrasound?

Interviewee (8): I still think that everybody basically, any woman who walks into an antenatal clinic wants two things. I would say probably may want to know male or female but not as much but, why they want to know male or female is very different as to why they want to know male or female there. From India and the Middle East they ask for that particular thing because they want a male. Probably for people who live around here, it is not for that, it is just for them to be mentally prepared for the baby, probably that is the reason. But in India it was they were very particular especially if they had had a previous female child because it would lead them to go for a termination. And in India now it has been banned, sex determination is banned. **Sex determination**

Researcher: Do you think they come for any other reason?

Interviewee (9): I think they want to know that the baby is well formed, that there is not any major abnormalities. **Uses the term well formed, interestingly, many prospective parents ask 'has the baby got all its fingers and toes?'** At times I would think, they expect

a bit too much, whether they understand that it is only the major abnormalities that we are looking at, because they do get a bit upset when we find a minor abnormality like a heart disease they think that ultrasound is some magic machine that if a little finger is not there then it should have been picked up by ultrasound. I think they have some misconceptions that we are seeing the baby as a whole, the entire baby's external appearance, external and internal, I think. That is in their mind. Still probably today, that they do not realise that things may not be picked up. **This doctor believes women have a high expectation of ultrasound and that everything should be picked up because you can see it.**

Researcher: Would you say their expectation is the same over the last ten years?

Interviewee (10): I would say that their expectations are getting more and more, they need that, science has advanced and they think that you should know everything. **Considers that technology has pushed up women's expectations**

Researcher: Have you a feeling as to why that is?

Interviewee (11): I think, it is because we are providing the service, it has become popular now, so popular at some centres, and some do better than others, so it is a question of, I think, because it is more common place then their expectations go up. **Expectations are raised because it is more commonly employed.**

Researcher: In terms of you as a doctor, working in antenatal services, where has your understanding come from? How have you gained your knowledge of ultrasound use?

Interviewee (12): From studying ultrasound at postgraduate level and from reading a lot about it. Basically, I think, it is mainly theory and I think my practical comes from my obstetric experience comes from working in the clinic, dealing with pregnant women and I am scanning for early pregnancy. We do use ultrasound as a common tool and it has become something when history taking it has become another tool for examination. **Ultrasound knowledge has come from training in ultrasound use.**

Researcher: Could I ask you to put yourself in the situation of some of our new medical staff. It might be difficult for you, yourself, to look back ten years. How much understanding of ultrasound do you think they have?

Interviewee (13): I would say to a certain extent, ultrasound to new staff I would say is the same as the patient **the doctor thinks that new doctors have the same level of understanding as the women** in that they would think anything and everything that they don't understand the limitations of ultrasound scan as a new start and I think that they would expect it to kind of rely too much on ultrasound and if ultrasound has not picked it up then it is not out there. They properly do not understand the function and limitations of ultrasound. **Believes that they (junior doctors) may rely too much of ultrasound.**

Researcher: In terms of when we offer ultrasound screening (20 week scan) how much does the doctor get involved in talking and discussing, counselling women for screening in ultrasound?

Interviewee (14): To be very realistic I don't think we are involved too much in this centre because I think the preliminary talking because they are very confident when they come for booking for their anomaly scan. We just say we are just going to look at the general appearance of the baby. We don't really talk in detail to the, I must really think that the midwife is doing it and she is booking the ultrasound scan. We don't talk much about it. **Again, this doctor talks about the role being another professional's responsibility, as if the discussion has already occurred.**

Researcher: Do you think that role is taken by the midwife?

Interviewee (15): As a routine, like today, within antenatal clinic, I didn't discuss it, I saw a few bookings but we just routinely say "your scan will be booked" and I would say that we are not really expecting to explain things to them. I don't know whether that's how the system has become then presuming that the midwife has already spoke to them about it. **The style of language is questioned here in terms of what it might imply, does it give the impression that women should have the screening test?**

Researcher: Would you say that you discuss "informed choice" with women frequently or hardly ever or never?

Interviewee (16): Hardly ever...Laughing

Hardly ever, because it is just taken for granted that if they don't want it they come forward and say that they don't want it. But as it is offered routinely they accept it and that is it. That is how it has become. **Women appear to need to opt out of screening rather than to opt in.**

Researcher: Have you ever been in a situation where a woman wants a scan but it is not clinically required and have you had to explain this?

Interviewee (17): Yes I have come across this situation. I would say that many a time that when they are bleeding and it is a threatened miscarriage and she is not bleeding a lot and we have found the fetal heart and they still want the reassurance of the ultrasound scan, we have declined. **Has had experience of declining ultrasound and the encounter with women who have high expectations.**

Researcher: How difficult is that?

Interviewee (18): I think it is the manner to which we explain it to them. We say that they have heard the fetal heart and you don't need it then they are reassured and they agree, otherwise if they haven't heard the foetal heart, I say to do a scan on her, I may not book a formal scan but I may reassure her by showing her on the scan. **This doctor thinks that if women hear the fetal heart, then they feel reassured.**

Researcher: In terms of improving information that we give to women, before they make their informed choice, do you think there is anything that the medical staff could offer or any training that may be useful to the medical staff

Interviewee (19): I would think that anybody who comes into the unit..... a refresher for those there might be a few things that I am missing or I worked in the unit I still do not talk about to them. But if I was given a reminder then I would talk about it and I would find a regular refresher perhaps about every 6 months about what we need to discuss or tell the patient and what is the right thing to tell the patient. This would let the new comers know and told about what the limitations are. I think there should be some kind of refresher when new doctors come in or something like that because I think it would be really useful for me, before they are offering anything to the patients.

Researcher: In terms of professional development, I know there are the monthly meetings, where topics are discussed, is there ever anything reviewed surrounding screening in obstetrics?

Interviewee (20): We do sometimes have a special postgraduate meeting every Wednesday. One of the few topics, the high risk topics and once in a while we do have antenatal screening and some other things like pre natal diagnosis and invasive procedures and I think we do discuss it once in a while but I would probably think it is once a year. **Little or no discussion about fetal anomaly screening.**
Researcher: I am trying to get a feel for, in particular, our new starts, and how much information they are open to especially in terms of abnormality and the process of doing an anomaly scan. I just wonder whether it is really discussed with them?
Interviewee (21) I would say the screening part of regularly but the detail would not be looked into at this stage and we would think it is more in the realm of the Sonologist to discuss this in detail. We don't tend to have that much of a discussion on that.

Transcription of the Tape Recording of Interview (I4)

- The number in the brackets refers to the response paragraph or sentence
- Researcher/interviewers memos are added in bold text

Researcher: First of all, could you just give me an idea of the experience you have had in obstetrics and gynaecology in your medical career.

Interviewee (1): Okay I am ST 4 so I am in my second registrar year part way through my second registrar year and I have done about 4 and a half years in obs and gynae and I qualified 5 years ago, no hang on a minute, how long have I done? Yes I qualified 5 years ago.
Researcher: Would you say that the posts that you have had are similar in context to each other? Or are they very different?
Interviewee (2): They are all fairly similar
Researcher: Have you ever worked overseas?
Interviewee (3): No
Researcher: What I want to do is to talk generally about the experience of offering ultrasound scans to women in the their pregnancy and in particular I would like you to talk about any problems that you feel arises when you discuss ultrasound to women in pregnancy.
Interviewee (4): I think that they don't see it as a choice, they just see it as something that happens and they don't really consider it as something that they could choose to have or not. They just think that that is what it is. That's part of the process. **Stated clearly that women do not know they have a choice.**
Researcher: You think that the women think it is part of the pathway.
Interviewee (5): Yes, I don't think many women realise that there is a choice involved
Researcher: Do you think that many of the medical staff that comes through the system thinks they have a choice, when the staff first comes to work here?
Interviewee (6): Yes I think they do, but I guess they don't often encounter people who say they don't want it. It is usually that women want more scans rather than less.
Talking about ultrasound scanning in general.
Researcher: Classing ultrasound as an examination to measure the fetus in terms of looking at the growth and you can use ultrasound in another ways, for example in screening. In terms of screening with ultrasound, do you think that the medical staff or teams see the 15 week blood tests and the 20 week ultrasound as equal screening tests? And do you think they are offered to women on a par?
Interviewee (7): No, I think that most people would do a little bit of counselling around the 15 week test, I think midwives are a lot better at that, but doctors kind of assume that people are having it, maybe, but I try to spend a little bit of time saying you do not have to have it, it just gives you a risk, you know it's a choice kind of thing. Whereas, I think the 20 week scan... people don't really consider it, most women probably consider or we are telling them to consider the pros and cons of the 15 week blood test but the 20 week scan probably we view it and they view it as something that just happens. **Reiterates the point that junior doctors do not see both scans as screening tests, only the Down's testing.** And I think that a lot of women are not aware that it is screening they think it is just to find out the sex I don't think they are always aware of the reason behind the test. **Believes most women think it is a scan to determine the sex and not a test to look for abnormalities.**
Researcher: Have you ever had anybody in any of your units decline a 20 week anomaly scan?
Interviewee (8): No
Researcher: Have you ever had a women decline the 15 weeks blood test?
Interviewee (9): Yes
Researcher: In that instance would you say that by the time women come to you in clinic in this setting, is there any time that you have had to discuss the role of ultrasound screening at 20 weeks?
Interviewee (10):
You see, most of the time when I see them, they have already been seen. First by a midwife at home and then probably by a midwife in antenatal clinic and most of the time I either see documented that this has been discussed or maybe I have presumed wrongly that this has been discussed and that my role is probably, in that short space of time that I have that's probably different so we don't spend much time discussing it with them. **Do not visit the subject of opting in or out of screening at 20 weeks , refers to the pathway where midwives see women first and presumes they have discussed this with the women.**
Researcher: In terms of talking about the ultrasound scan, a just want to go back a little bit, in terms of using ultrasound in early pregnancy. This is maybe a time when you see ultrasound being used as an examination. Would you say that if you could get hold of any statistics surrounding results of ultrasound in early pregnancy, would you feel comfortable using those statistics?
Interviewee (11): What sort of statistics?
Researcher: Statistics relating to areas for example 1 in 5 pregnancies end in miscarriage? Do you use that type of talk/tool with women?
Yes...
Researcher: And you feel comfortable using figures....?
Yes
Researcher: Do you remember where you got the figures from?

Interviewee (12):
Probably listening to other people doing it when I was more junior
Researcher: From others, rather than reading from the literature?
Interviewee (13): Yes **Likes the use of stats but gets the info from listening to others, second hand information...old information....how accurate..does not know.**
Researcher: Would you say that over the years you read up and review as to whether those figures are still upheld or do you think that what you learned in the past you still use and take as read?

Interviewee (14): Well at the moment I am training for my part two exam so I am reading a lot **(laughs out loud here),** like the college guidelines about early pregnancy and all that. **Reading a lot about ultrasound for exams but guidelines on practice not mentioned about counselling and ultrasound limitations.**
Researcher: Yes and obviously that has been high on the college's agenda at the moment, so there has been a big look at the various guidelines. Can you remember, going back to your training in university, did you have very much training in obs and gyne?
Interviewee (15): We had several placements.
Researcher: Can you describe what they taught you in terms of ultrasound use in obstetrics?
Interviewee (16): It's hard to remember, because your experience is cumulative and you only remember the more recent bits. I can't remember it being a major part; I don't even think I even saw an ultrasound as a medical student, not even if I watched one being performed, probably not.
Researcher: If I said to you "informed choice" what does that mean to you?
Interviewee (17): Knowing all the information about the different choices so that they are able to evaluate that information and make your own decision.
Researcher: Do you see any slight difference between "informed consent?"
Interviewee (18): Yes because for consent, you only have to tell them about one thing and for choice, you have to tell them about, there is an option of not doing it or, so you don't need to necessarily discuss all the options when you are just asking for consent. **You have to tell women there is an option to not have a test.**
Researcher: Had you thought that there were two different statements for informed choice and informed consent, in terms of offering ultrasound screening, or have you always thought of it as being informed choice?
Interviewee (19): I know that it is supposed to be an informed choice but I don't really think in reality that the average women realises she has a choice...or maybe they do and they and they are sure that they choose to have an ultrasound. I can't see that, like I said to you before, I have never met or had the experience where someone has said that they do not want the scan. It is normally the other way around where they are desperate to have a scan. And they want more and more scans.
Researcher: One of the questions that someone else brought up was about experience of giving bad news to parents or the families of parents to be from the ultrasound or when they have had ultrasound screening. How much experience would you say that you have had?
Interviewee (20): A minuscule amount.
Researcher: Would you say this unit prepares you well for that.
Interviewee (21): Prepares me well?
Well I guess we come here at this stage already having done a fair amount of breaking bad news and things and we apply the kind of skills that we get taught quite early on and you get used to doing it when you are a junior when you have to tell relatives that someone has died. I guess I came with a skill base so I haven't really had any specifics for training in that particular thing but I would not really say that that is a need at the moment.
Researcher: And would you say that it is quite dependent on how much experience you have had in the past, In terms if this post had been your first obs and gynae post?
Interviewee (22): If it had been my first obs and gynae post as a doctor I don't think it would have been appropriate practice for me to break bad news about scans because it inevitably it would be something that needs someone with more knowledge to discuss it.
Researcher: How much knowledge would you say you have of ultrasound screening?
Interviewee (23): Probably not as much as what I would probably like (laughs) I think that is an area that I am addressing in my revision for my part two. It is actually, I supposed most, I have worked in areas in district hospitals, but I have worked for 18months at a fetal medicine unit and that is probably where you see most anomalies and things, or that is where they end up going, isn't it? But because it is so separated up (that hospital ultrasound service), the fetal maternal unit is separate with the fetal maternal consultants then there is not really any registrar involvement apart from a few learning scan sessions, which are few and far between and we don't really get involved in the complex cases so I think actually it is an area of my training , fetal anomalies that I haven't had much exposure to, because it is always creamed off into the specialist area and we just work as a general dogsbody in the antenatal unit. So you don't get to see that much which is a shame really. **Doctor disappointed in the lack of hands on training received in fetal anomaly screening.**
Researcher: I understand that in a teaching hospital that can be the case, but in a smaller unit like this setting, everyone comes across everything and there is a shared role.
Interviewee (24): Yes
Researcher: Just to reiterate, if a lady was to say to you, can you explain the 20 weeks ultrasound scan to me and what should I expect. Would you be able to give a reasonable account?
Interviewee (25): Yes **has knowledge about fetal anomaly screening**
Researcher: A question about serial scanning. What does serial scanning mean to you?

Interviewee (26): It means monitoring growth by repeating scans over a period of time
Researcher: Has any women ever asked you about why you are scanning that number of times, if it has been decided to perform serial scans?

Interviewee (27): If I was with a patient and I decided that is what she needed then I would always explain why, because normally when I see someone at booking you take a history, look through the notes, identify the risk factors and then you would usually go through those risk factors with the woman and talk to her about the plan and why and arrange that plan, yes because we had a baby who only made 2kg last time and we want to monitor the growth.
Researcher: Do you ever have women requesting less of the growth scans?
Interviewee (28): I guess occasionally, take women who already have a few children and don't want to keep coming up so often.
Researcher: And do they generally give a reasonabe reason?
Interviewee (28): Yes
Researcher: Do you ever get women who ask to be scanned more times than what you suggest?
Interviewee (29): I think people often ask, when they come in, but I do not know how much of that is put in their heads already because sometimes they get sent up for small for dates when they are already having serial growth scans and it is in the interim. So if they have already been told that we think your baby is small and they have had a normal scan then it makes it quite difficult really to reassure them, if they have got a history. **Having a scan does not always reassure the women.**
Researcher; Is there anything that you want to add?
Interviewee (30): Apart from I have realised that I have been a doctor for more than 5 years it is 6 years (**laughs)** Time just goes by doesn't it.

Researcher: Just to end, do you feel you are getting good support in your learning in terms of ultrasound in obstetrics? Do you feel that both units support you well enough?
Interviewee (31); Well, a big need in my obstetric training is to do more scanning and that has been a little bit, it is actually part of the basic log book with the college now and I think that everybody everywhere is finding it incredibly difficult and I want to do obstetrics and I want to be able to be good at scanning but I haven't really had much opportunity to practice it but now obviously the ultrasound department is helping me out and this is good, but it is a bit of a battle to give me the time out of the rota even though it is considered a mandatory part of our training. **Would like more time to training and learn about ultrasound scanning.**
Researcher: There has been a history of problems of providing time for ultrasound training. Plus the time in our unit, to provide time is also of issue.
Interviewee (32): You don't get any time. It is a bit of a global issue, I think and not just in this hospital. **A big issue of lack of time**
Researcher: Changes in your mandatory study, obviously affect this ultrasound unit, but there is never a discussion, inter professional discussion about how we can try and identify and move that on. There is definitely an issue there that we need to address at some point. Perhaps highlighting the issue in national committees, overseeing screening and obstetric services, may help to begin to address this issue.
Interviewee (33): I think that this is a really good issue for there is a lot of training, the conference I went to , last week, there was a London trainer who did a presentation, who surveyed the trainees in London and their ultrasound experience and their difficulties with getting training and teaching and a lot , one of the things that came out of it , was that a lot of them were taught by other people who the doctors, who haven't been properly trained, which is, when they are saying it is something that is mandatory and we are all going to be doing, then I think it is a shame and especially when you think about the way that obstetric practice is likely to go then I think CTG's and fetal monitoring are not really great and everybody knows that there isn't really any evidence for it and so probably increasing scan parameters and Dopplers and things are going to become more part of day to day obstetric practice, more kind of general ways of monitoring the fetus. If the doctors provide the service, are they able to do that. I don't see how it will work.
Researcher: In terms of women's expectation, anybody who picks up the probe, they have got great expectation from them, and if it is from the tradition of see one do one teach one scenario, I am afraid it isn't a good foundation to excel and move ultrasound on.

Transcription of the Tape Recording of Interview (I5)

- The number in the brackets refers to the response paragraph or sentence
- Researcher/interviewers memos are added in bold text

Researcher: I welcome you to share your experience working in this department within this hospital. But first of all, can you just give me some background without repeating your identity that you have said that you have been working in obs and gynae here for about one month. Can you explain your background?
Interviewee (1): yeah that's right yes, for one month working in the obstetrics and gynaecology.
Researcher: Have you worked in obstetrics and gynaecology in any other trust?

Interviewee (2): No, no, not working, but I have had a small bit of experience as a medical student in Leicester, but I was there a few years ago and I don't remember much about it.
Researcher: Have you done any work overseas?
Interviewee (3): No
Researcher: What I would like you to do is to talk freely about your own personal experience of offering ultrasound scanning and ultrasound screening, to pregnant women in this trust.(as a registrar)
Interviewee (4): to be honest, I think a lot of it is quite impersonal from the doctor's point of view it seems that we are informed that this person needs of scan. **Part of routine pathway and doctors do not feel involved, impersonal** I don't feel I have a lot of personal input into explaining what will happen to the lady or what she's going to expect or what we are looking for or why we are doing it as so often quite a lot of implied knowledge of the woman really may be quite slightly skewed as a medic but I think it is perceived as women presume they're going to be getting the scan in their pregnancy and it is all pretty much run of the mill so I don't think well I certainly don't take time to explain why they are having a scan or what we are looking for as I say, a lot of it is actually taken away from you as a medic I feel that nursing staff sign the card or she needs a scan, but in this form and hand it in, it just happens without having much communication with

the woman and this happens in both antenatal clinic and early pregnancy clinics as the ease the two big clinics really where we have experience of requesting the scans. **Makes the point about other professional roles in the pathways**

Researcher: Just to go back to your idea of what you expect women are having in terms of ultrasound, your ideas, do you think they come from your training in University, placements during university teaching or do you think your ideas come from listening to other professionals or other people within your team here in this trust?

Interviewee (5): I don't think there's much taught at all at university about ultrasound scanning in any field let alone obstetric ultrasound scanning. **This doctor seemed disappointed in the lack of knowledge given at university** I think are all so having a child as well, there is a personal experience that we draw on and being the age I am late 20s and early 30s I will leave you to guess, I have friends and colleagues who are all having babies and who are going through the process of ante natal's, some are having infertility treatment with ultrasound monitoring of foetal growth, so there are a lot of personal experiences as well as professional experience, **experience built on personal encounters in pregnancy and friends stories** but there again professional experience has not been particularly taught but you absorb from reading literature such as nice antenatal guidelines **have they only read the medical guidelines and nothing about the social aspects of care** and you should be scanning and learning about what's going to happen and EPAU the job before you offer a scan but I do not think there is anything in particular you are taught, I just read and absorbed personal experiences.

Researcher: How much would you say that you did read in terms of before you started working for this trust? Was it a large portion of reading or do you not realise how much to be before starting.

Interviewee (6): Reading about ultrasound?

Researcher: Yes about ultrasound use.

Interviewee (6): yes I did quite a lot of reading, I think it has become, from recent meeting and preparing for the job, it has become clear that there is a larger role than I thought and I guess that's the difference I think, between reading and personal experience and professional learning, having had a fairly normal pregnancy, with my daughter and having a couple of scans and that's it. I knew what they were looking for, or rather I knew a little bit about what they were looking for, but I didn't appreciate just how much and in how much detail the scanning is, until having done some reading and then having spent some time down in the ultrasound department, over the last couple of weeks and actually having a session with a practitioner and them saying this is what we are looking for and this is what it looks like. I thought that what a real eye opener. **Term 'real eye opener' and from facial expression, there was an impression that the doctor was very surprised at what fetal ultrasound screening entails and only realised this after asking to observe a session in the ultrasound department.**

Researcher: Was that at your request or was it suggested to you by other staff in your team?

Interviewee (7): I think it was a bit of both really as there appeared to be some time in antenatal clinic, a bit of a lull and the woman was going for a scan and someone suggested I popped round to watch the scan and I agreed, I quite liked that idea and then I went around one afternoon, nothing formal, it was non directional, but more of an enquiry in line with post grad, yeah, but I found it very useful and interesting a real eye opener, into what limitations and what you are able to see and the detail that you can look for. **Another mention of ultrasound's limitations, this appeared to be what they meant as a real eye opener.**

Researcher: Thinking about that short time that you had working with somebody in the ultrasound department, can you think back and consider in terms of what the women might get from the ultrasound scan? I don't know what scans you saw but obviously we scan for different reasons but we do a large part of our scanning is termed screening. Did you see any screening?

This is the 20 week scan

Interviewee (8): Yeah,

Researcher: Do you feel that you learnt anything from watching a 20 week scan, in terms of what the woman gained from the procedure?

Interviewee (8): I think that is quite a difficult question really, I think the scans that I did see women were quite passive and laid there, you know and asked if everything was alright...yes... alright then can I have some pictures. **Women wanted to know is everything all right and can they have pictures.** So I guess I learnt that they were looking for a bit of reassurance, but I got back to that perhaps implied thing that you kind of assume women know why they are having the scan and you assume that they are assuming that it is all going to be fine and I think that is the general feeling that I get that women want it to go alright when it is just a routine scan you know you often hear them say that the general assumption is that women are going to come in and have a normal scan and everything is going to be alright and hunky dory and the scan is just to confirm that everything is alright and that is the general feeling that I get. **Used the word assumption several times and that you just expect everything to be ok.** As I have said, women are very passive, after a quick look they ask if everything is alright, yeah is looking okay, then can I have some pictures and that's it but I do not know whether that's probably a sweeping generalisation...

Researcher:

Is that how you feel you found women reacted when watching them having the scans?

Interviewee: yeah

Researcher: Do you feel that their expectation of ultrasound is the same as what your expectations were, before you watched the scan session?

Interviewee (9)

Going back to personal experience, before I had any obs and gynae experience, there are different perceptions and certain expectations...yeah I think as a parent and speaking on behalf of my partner, going in there you just want to know that everything is alright **know everything is alright** maybe have a little look at what sex it is **gender determination** and get the pictures '**get the pictures' gives the impression that they are the big reason for wanting the scan. To have something to see and show others**, but then I think as a professional and seen what you can actually do, my expectations will have changed from what you can get from that. I think that is the interesting bit, how you would expect to see and know a lot more than before I had that viewing session, so I think there are different expectations now from being a medic as compared to being a woman.

Researcher: Do you think that your understanding of ultrasound has changed just by watching that session?

Interviewee (10): I was actually surprised at how much more you can see and I thought it was much more limited than it is so...**This doctor expected less from the 20 week scan than what can be seen.**
Researcher: So you came with the idea that ultrasound scanning was much more limited but after viewing a few procedures your view was...
Interviewee (11): a lot more detail and I was quite surprised by how much more...
Researcher: in terms of the detail of the internal structure of the foetus at 20 weeks
Interviewee (11): yeah yeah, but in terms of screening and different a soft marker that was quite an eye opener for me
Researcher: In terms of ultrasound, do you think that new starts, in obs and gynae, do you think that you were well equipped to offer ultrasound to women in pregnancy from day one in the unit?
Interviewee (12); I think that if I had been asked by a women I was offering ultrasound to , any specific questions, I would have felt quite underequipped. **Doctor felt underequipped to talk about 20 week scan with women.** I would have been quite taken aback and I think now that I would have been unprepared for that. But as I said earlier, thats because a lot of it is taken away from you, **because of following pathways?** I don't think you get that personal conversation like, why am I having this scan and what is it going to show. You don't get that and therefore a lot of the time it is just signing a form, which I think is a bit of a shame really.....
Researcher:...in terms of the ultrasound practitioners perspective, picking up on how we counsel for the screening tests we would automatically refer back to the medical professional when an abnormality is diagnosed now, how do you feel about that and do you feel you could cope with talking to women about the fact that an abnormality has been picked up, not so much the specifics of the abnormality, but the fact they came in presuming that everything will be alright and they are then quite distressed because we have delivered some bad news?
Interviewee (13): Well I think that this is always going to be a difficult situation and I think that is where the first stage of having that meeting with the woman and telling them why they are going for a scan and that's what we are looking for and I think that bit is missing and therefore it makes the explanation all the more difficult because obviously they are going to come back to you with a problem and then you are going to say "well do you know why you were having the scan in the first place" so it's a reverse way of doing things and I think that makes the situation a bit more difficult. **Hinting that being more involved in information-giving might help supporting women with bad news.**
Researcher: I am looking at the interaction between professionals at the counselling stage for women for ultrasound screening and what I am interested in is the medical perspective on how much involvement they feel that they ought to be involved in. What I am hearing is that at present, there is very little connection between the medics and how women are counselled for screening. What are views on where you think the medical profession ought to be on this issue?
Interviewee (14): yeah absolutely, I think personally, I would like to be involved but I appreciate that the sheer numbers is the big issue really **lack of time given as a reason why they may not be involved in information-sharing process** and that is the difficulty and that is where it falls down. Ideally we should sit down and have that chat be properly counselled rather than just imply that they, sorry presume **Term presume used when talking about whether women know about the ultrasound scans** that they know why they are going for the scan, which seems to be the case. But I think it is sheer numbers and that is the realistic problem that is the scenario.

Researcher:
Do you think women enjoy having ultrasound scans in their pregnancy?
Interviewee (15): When everything is okay yes and when they find out what they are having and they take pictures home, they seem to be, yeah...
Researcher: so when the outcome is good...
Interviewee (16): yeah **believe women enjoy scans when outcome is good.**
Researcher: Have you experienced a situation when the outcome is not good?

Interviewee (17): Not in, well with the exception of EP assessment with missed miscarriages and that, but not so much in the more antenatal scanning and screening and later pregnancy problems. I have not had experience in dealing with these issues yet.
Researcher: Is there anything that you would value some understanding or being part of, before getting involved in having to explain to women about ultrasound screening. Is there any area that you feel as a medical registrar's role would you feel would help you and improve our service?
Interviewee (18): That is a difficult question... Laughs... long silence...I guess it depends on what it is really and what the abnormality is , if you are talking about soft signs or it might be or it might not be, then I would certainly want to know how accurate is this and what are the implications of this result. If it is something definite or if it is more a softer sign then is it implying something...
Researcher: more evidence...
Interviewee (18): yeah... evidence in the literature
Researcher: more up to date evidence from the literature to support the diagnosis
Interviewee (19) yes, I think that would be useful
Researcher:
Do you use any statistics or any literature when you talk to women about ultrasound in early pregnancy?
Interviewee (20): Not at the moment, I try not to as a general rule to be honest with you, it's a personal thing, if you are asked and you are pushed for it then it's always useful to know some, but I think in this particular emotional times it's easier to giver generalisations rather than hard statistics, as there has got to be some understanding of what the facts and figures mean and I tend to talk more bluntly and generally rather than using facts and figures **Does not generally apply stats when talking women women about scan results.**
Researcher: Is there anything you would like to add about your role in ultrasound scanning and screening, any area that you feel would value information for new starts in the medical profession, or do you feel you know where you can get the information and support?
Interviewee (21)

I found the time that I spent, in the ultrasound unit extremely useful. It was a real eye opener and it generated a lot of thoughts which gave me a lot more understanding and I believe that would be valuable perhaps to have a session built into the early weeks.
Described the time spent observing ultrasound session valuable and was thought provoking.
Researcher:
In terms of practice of medicine and following the medical model of pregnancy, it is good take a different perspective, especially in obstetrics, and by seeing a session of ultrasound, this may provide another perspective. Do you feel there is value in seeing another perspective?
Interviewee (22) Absolutely, **strong opinion seen in facial expression**
Researcher: Just experiencing other perspectives, such as mother, partner, family extended family and other professionals at work, do you see any value in this?
Interviewee (22): especially useful when trying to support someone in delivering bad news... (Both agreeing with this) **Valued the idea of experiencing or considering other perspectives on ultrasound use (social model thinking)**

Transcription of the Tape Recording of Interview (I6)

- The number in the brackets refers to the response paragraph or sentence
- Researcher/interviewers memos are added in bold text

Researcher: Describe your experience of offering ultrasound screening to women in their pregnancy in this local setting, have you any experience in this?
Interviewee (1):Ok, umm, it's very limited, I've only just started working in the Obs and Gynae department As far as routine screening, I've just participated in a couple of antenatal clinics and just for the routine scanning, other than that I haven't really been involved too much. I'm on the second year of general practise training. I'm just starting a 6 month post at Obs and G.
Researcher: What was your previous?
Interviewee (2): Previous to that, I've done, as part of my rotation, I've done paediatrics, dermatology and rheumatology and general practise and before doing VTS, I was an orthopaedics trainee for a year.
Researcher: Oh right, Ok, So relatively new to the field of Obs and G.
Interviewee (3): Definitely, yeah
Researcher: So quite new to lots of women in pregnant state
Interviewee (3): Yes (both parties laugh)
Researcher: Ok, First of all obviously, you do come across women in particular who are having problems in early pregnancy. Just describing the experience that you've had or what you have regularly with these types of women.
Interviewee (4) Well, from sort of doing the Gynae on call, some come in and do present with bleeding in early pregnancy and I routinely order scans for those ladies when there BhcG's are above a thousand, just to confirm there is a viable pregnancy, umm that its intrauterine as well and the presentations are the query ectopics and they can be scanned as well. **Stated the text book requirements/ protocol for scanning in early pregnancy with problem of threatened miscarriage. Spoke as though he had just read the information**
Researcher: Do you notice a difference when you are offering a pregnancy scan for these women as compared to any other tests that you also want to offer these women or perform on these women like blood tests etc. Is there anything about Ultrasound that's different?
Interviewee (5): I think for the women its probably got more of a sort of significance than a blood test or something, especially if they get shown the pictures and they can see the baby umm and I have had a couple of occasions when they have been asking "am I going to have a scan?" as if that seems more important to them than other investigations. **More important than any other tests offered.**
Researcher: So you don't get many women asking for a blood test
Interviewee (6): No, they do quite like to have the scan I think. **Women like the scan**
Researcher: Yes yes, what do you think your personal feeling is as to why this is so?
Interviewee (7): Umm, I think ultrasound scans are part of the routine, pregnancy, you know, monitoring umm and sometimes they get the pictures they can take home and show family and friends and things, so from that point of view they think that its just a sort of normal thing that they should have done during their pregnancy umm and perhaps because of that if there is something wrong, then they think I need another scan to check. **Normal part of pregnancy**
Researcher: Do you think that women have a high expectation of ultrasound or not
Interviewee (8):Umm ... I don't know I wouldn't say ..... don't really know **Does not know what women expect from ultrasound**
Researcher: Not sure
Do you have high expectation when writing a request for an ultrasound scan?

Interviewee (9): Umm I don't know I know there is sometimes there's difficulties with any investigation and you don't always get all the information that you need umm but umm I take it from the sort of induction we were given in the department and from teaching from registrar's and SHOs who have been here for longer, umm, you know if we are seeing for example, one of those early pregnancy bleeds or something and betas are above a thousand and then you should get the information you want from the scans **Does not know what expectation he has from ultrasound scans but can quote the level at which a pregnancy should be seen in the uterus.**
Researcher: If it fits the protocol then you would expect a result
Interviewee (10): Yeah, I mean, I do understand that sometimes there are difficulties, you know, that's medicine really
Researcher: Do you think umm, you've just talked about your induction process, is there anything in the induction process for new starts, in terms of ultrasound and offering ultrasound to women and the capabilities and limitations of ultrasound scans?
Interviewee (11): No, to be honest, the induction was a lot more medical legal things rather than anything actually useful to practice and clinical umm, clinical medicine in the department. We did get given a handbook which has information in it umm, but it was more case of read the handbook that has information in it than actually get to proper teaching and guidance. We did have sort of did a starting days

where we were on call with an SHO who has been here longer and we rely on them. **No real useful help in the induction pack, more of shadowing and SHO for a day and pick up what you can.**
Researcher: Shadow someone for a period of time
Interviewee (12);Yeah, so that was quite useful

Researcher: And the handbook that you received, umm, its Obstetrics and Gynaecology handbook?
Interviewee (13) :Yes
Researcher: Yes and would you say it's written in a very medical model, or is it quite qualitative in its writing.
Interviewee (14): It's quite sort of bullet points umm yeah
Researcher: Pathways or is it that type of....
Interviewee (15): Yeah, it's a lot of pathways **Handbook full of pathways to follow.**
Researcher: Ok, during your induction, is there anything apart from your guidelines or your handbook, any other professional input into your induction, in terms of ultrasound in pregnancy.
Interviewee (16): Not particularly, no, it was quite a limited induction really
Researcher: Are there any comments you have about that; is there anything you feel might have been useful for you so far?
Interviewee (17): as a sort of relative newcomer to the department I'm quite unfamiliar really with even the sort of regime for the routine scanning umm
Researcher: Yes
And sort of knowing the minimum gestation that you can pick up in an ultrasound scan. It would have been nice to have a bit more that sort of information in the induction rather than trying to have to pick it up as you go along. **Prefer to have some information rather than having to pick it up as you go along. Sounds like see one, do one, teach one principle**
Researcher: I suppose as you meet a situation, you are learning on the spot.
Interviewee (18): Yeah

Researcher: Is there any, do you see any value in understanding some scenarios sometimes at the induction and getting other perspectives from scenario or do you think that wouldn't be suitable for a medical induction.
Interviewee (19): No, I think scenarios often help; it helps to get your head round it a bit more, when you think of a sort of real life situation rather than just somebody lecturing you.
Researcher: In terms of later on, once you've established your role in the team, is there any time that you are asked or you attend ultrasound to work in the department, to get some experience
Interviewee (20): I don't think it's routinely in the timetable but it would be something interesting if we had some spare time.
Researcher: So time is premium in your profession and there are mandatory parts of your contract that you have to fulfil.
Do you think there may be some value in watching the type of tests that you are requesting?
Interviewee (21): Most definitely
Researcher:
I just want to turn the question around to another area of ultrasound in obstetrics which is fetal screening. Have you heard of foetal screening?
Interviewee (22): Laughs... yes
Researcher: At present we offer a scan around 18-20 weeks, for foetal screening and by the end of this month, I am sure you will be aware that we will be offering women a further screening test, nuchal screening as well. So there will be two screening tests, using ultrasound, offered. What information do you get with regard to foetal screening, either from the university training or from your induction?

Interviewee (23)
I don't think there is anything specific that I have been given. The situation has not arisen yet where I have had to counsel a woman for a screening test as yet, but I guess that when the situation arises, I will be speaking to one of the registrars to get some information or have a look on the internet, **find info from other medical staff or the internet** but there has not been any information given to me.
Researcher: So you think you will have to source some sort of information for yourself.
Interviewee (24): yes
Researcher: In terms of your working in this setting, have you spent any time in antenatal clinic yet?
Interviewee (25): I have done a couple of sessions because I have been on annual leave and things and for those, in particular, one of those sessions, I was just shadowing one of the endocrinologists which was not particularly relevant there, and for the other session, I went to see a few ladies but that particular topic of conversation was not appropriate for that visit.
Researcher: Are you aware that all women will be offered, in particular, at the end of the month, both screening tests?.
Interviewee: yes
In terms of working in antenatal clinic in the future, every woman coming through will have been offered and taken up the offer of one or two screening tests for foetal abnormalities. How much involvement do you think, in the future, in the role that you have, do you hope to play in understanding foetal anomaly screening?
Interviewee (26): Well I think that any test that you are sending a patient for, you need to have an understanding and be able to answer their questions, **believes they should be knowledgeable about tests but has not gathered the knowledge or been offered it.** be able to counsel them on the test and explain outcomes that sort of thing. So I do think it is certainly something that I will need to know about.
Researcher: And in terms of the medical profession and the women's perspective, where do you see yourself in terms of what the women think, how much information do you think the women think you have about all tests?
Interviewee (27): I do not know, I think it will depend on the lady but I think generally the woman expects the doctor to have at least some understanding of everything that happens when they come into hospital. **Believes women think doctors are knowledgeable about the tests.**

Researcher:
Have you ever had to say to a woman, I don't know?
Interviewee (28): Well yes and in general practice, it is said quite regularly as a rule and we might suggest that we call them back in the afternoon when we have had chance to talk to our colleagues about it. It is the same thing for you if you do not know then you do not want to lie to them more and fob them off. **The idea of ' if I do not know then look it up and tell them later'**
Researcher: Do you think that, in terms of the medical perspective, because the medical team's offer foetal anomaly screening, do you think the women think that because the medical profession are offering it then they are in effect advocating that it is a good thing?
Interviewee (29): I don't think it necessarily matters who offers it, a lot of antenatal care is midwife led and I think that the doctor and the midwife, midwives have more of an important role in relationships with the patient than the doctor, so I don't think it matters who offers the screening tests. **Midwives have more of a relationship with the women than the doctors do.**
Researcher: Is there anything that you want to add to the conversation about ultrasound that you think would help you in the next few months, to feel more confident in the role that you have in obstetrics
Interviewee (30): At the moment I am just going through that phase where I don't know the questions that I need to be asking until I encounter them in the clinical setting but I think that at the end of the six months I may be able to tell you things that may be useful to know at the start of the six months. **Does not know the questions he needs to ask until he has encountered it in clinical practice.**
Researcher: I am certainly interviewing nearly everyone in order to get a range of volunteers with a mix of working experience and hopefully be able to see where the areas are that may be useful in the future., but it nice to get the personal medical perspective regarding their role in obstetrics here.

Transcription of the Tape Recording of Interview (I7)

- The number in the brackets refers to the response paragraph or sentence
- Researcher/interviewers memos are added in bold text

Researcher: First of all, just tell me how many months, years you have been working in the field of obs and gynae
Interviewee (1): I have worked in obs and gynae for about 21 years
And in your 21 years have you solely worked in a setting, such as this Trust, in this country or have you worked oversees or anywhere else in this country.
Interviewee (2): Three years oversees and eighteen years in the UK, with ten years at this Trust.
Researcher: The main question I want to ask you, is can you describe your experience of offering ultrasound scanning and ultrasound screening to pregnant woman?
Interviewee (3): First of all, I just want to take you back in history to the early nineties, scanning was more or less offered, to most women but probably only once in their whole pregnancy. Subsequently with studies, research and scientific evaluation that has come through, there has to be a minimum of two ultrasound scanning in a normal, nothing is normal, routine low risk pregnancy. Though that is the understanding, very often we look at the users i.e. the patient, they desire more frequent scanning and to add to that a lot of my clinical colleagues have started doing a lot of extra scanning in the second and third trimester either to identify structural early problems or for fetal assessments, growth an example is scanning for high risk pregnancy or notching of the umbilical artery as recommended when we go to senior meetings but it has still not been implemented. So, in a nutshell, I think that the demand for ultrasound scanning has grown and has been growing from both the professional and the users.

- **No pregnancy can be classed as normal**
- **Women desire ultrasound scans**
- **Colleagues are increasing the number of scans they request**
- **So demand for scans has grown from the professional requesting and from the women.**

Researcher: Do you think that you have increased in the usage of ultrasound over the last say ten years?
Interviewee (4): Absolutely, obstetric scanning and the and the doubt for large for gestational age scanning, growth restrictions scanning, any medical diseases like if you see our protocol, abnormal liver function tests do a growth scan, cholestasis in pregnancy, then do a growth scan, it doesn't have anything to say that growth is restricted, but has become our practice. That is our practice and that is what I do.
It has become practice to scan for many reasons where growth retardation is not usually an issue.
Researcher: When you suggest a woman has a scan, give me your idea or experience on how women react to that.
Interviewee (5): Women are very positive; we have the ward side scanners as well. The request I get to go to room seven and scan is increasing, that is to lessen the pressure on you but yes I think most women desire a scan and their eyes flicker when you say they are going to have a scan and some of them even demand on grounds that are not scientifically founded.
Women's eyes flicker when you offer a scan and some even demand a scan, are doctors powerless to say no?
Researcher: If that is the case and a woman demands a scan and you feel it is not clinically justified, how do you feel and what is your experience regarding explaining to the lady that she doesn't need the scan.
Interviewee (6): I mean, first of all we give all the facts and figures to justify why not but some of the facts and figures do not fit into her expectation, **women and doctors have different levels of expectation** so basically, unless either the mother or the baby is compromised then we set the policies in place. We are finding a lot of these women are going to the private sector to get the scans done and are happy, probably if this goes on we might have to give them the choice, this is what we offer, if you want anything more, want know

the sex of the baby at eighteen weeks or see other features of the baby and have another scan, probably they will have to pay for them themselves.

Researcher: In your opinion, what do you think drives the demand?

Interviewee (7): Basically, when I was young, we used to keep a picture of when we were first born. Now they want to keep a picture from inter utero situation and second thing is that I think there are a lot of demands where women want to be reassured and by listening to the foetal heart by sonic aid is not good enough in the present day when science has given us so much. You can actually see something now and this is amazing to see the fetal heart and see the fetus jumping around, it is amazing.

Demand is driven by the desire for a picture or to "see"

Researcher: Do you think women understand the statement, "that just because you can see the fetus on the screen, you can't prove there is nothing wrong with it?"

Interviewee (8): I don't think they understand that, I think they just want to hide ignorance of knowing that know that we are there to identify the medical problem and they are there to see the well being of the fetus. Just the feeling of moving, does not always confirm that everything is fine, so the perception is a recap.

Just the feeling of movement is not enough

Researcher: Can I just take you to the idea of ultrasound screening and screening for abnormality, what are your personal views about using ultrasound to screen for abnormalities and particularly for low risk women?

Interviewee (9): I think that there is nothing as low risk in my sense because a low risk is only a low risk when you rule out high risks and that is how I look at it. So, basic scanning and especially screening scanning I think is very very important, it is important for the baby, for the mother and also for the clinicians, so it is important for all of us.

Screening and scanning is very important to both ourselves and the women

Researcher: In terms of today if a woman was to ask you what is ultrasound screening, do you feel you will be able to give them a good, rounded discussion or statement about, what ultrasound capabilities and limitations are, in terms of offering the screening scan?

Interview (10): Yes, more or less the key point is what we see as structural abnormalities, we cannot see the function in general. In a nutshell, the system that we can see and colleagues like you that have been experienced over the years; we would be able to give that in most cases, like in most sides.

Researcher: Would you say that is the same for all members of the medical teams in this Trust?

Interviewee (11): No, the reason because most of the juniors have not gone through the training of communicating of having not been trained and this comes with time. One off training in communication is not good enough for them to be a natural communicator and we are picking up a lot of these cases, where they have been misinformed or informed in a way that has been misconstrued and we are picking up the pieces and have to see those patients again and reassuring them. **Junior staff have not had training in counselling or discussing ultrasound screening.**

Researcher: Do you think there is anything that we can help to take the next step in helping some of our junior staff understand ultrasound capabilities and limitations in terms of being able to inform women better?

Interviewee (12): I think that is absolutely a must and I think a part of the complications for juniors in training is the need for juniors they should be observing. Everyone who does scans, we have two or three staff doing scans, for two sessions five times a day and they should have the opportunity to include one of these as training just to sit down as an observer and see when you are doing a 20 week scan, when you start, what you say and what you say after. That could be part and parcel of his or her knowledge and then give them our explanation.

Considers observing ultrasound as important in junior doctors training.

Researcher: Is there anything in the induction period for our new starts; is there any training or information that they receive in terms of counselling women for screening in ultrasound?

Interviewee (13): No, the reason because they only see the abnormal results, they do not see the low risk and the abnormal results usually goes to a senior person or a consultant

Researcher: In response to the women in clinics, do you think they can separate the different grades of medical staff, in terms of their knowledge or limited knowledge dependent on where they are in the medical team. Do you think the women can identify the differences or do they see a doctor as someone with all knowledge?

Interviewee (14): I think nowadays, most of the clinics have the names and the women actually know who the consultant is but whether they actually know the difference in the knowledge in the different grades, I do not know whether they are clear about that. **They believe that women know who are the consultants but not what grade or experience the rest of the staff may have.**

Researcher: I think in having the title of Doctor, I just wonder what you think, women perceive one doctor from another. Do you think that they understand that some doctors may have little knowledge in obs and gynae whereas obviously, in the more senior grades perhaps has a wealth of knowledge. Do you think it is important that women be made aware of this?

Interviewee (15): It is important because I think most of the clinics try to impart that information and the people with their ranks, but also women are doing a lot of homework so a lot of them they know who they are seeing. They might not differentiate between an SHO and a registrar but hey might differentiate between a consultant and other grades.

Researcher: I know we have a handbook for our new starts, in obs and gynae, could you just describe that handbook, would you say it is a practical guide or is it a thought provoking guide for the new starts.

Interviewee (16):

Which handbook?

I am told they are all given a handbook at the start.. oh yes I see. They have a handbook where we compile information, general information about the hospital, Trust policies, like infection control, antibiotics, hand over, annual leave. These are the information and we need to populate these handbooks more. At the moment, I think we get information from specialist like yourself and we can include this.

Do you think there may be work in this to look at inter professional areas of work in terms of helping new starts work as a team and help them understand what other professionals do?

Interviewee (17):

I think that is important in a way because we have induction, but to draw a balance between service delivery and induction, we had a half a session induction, ten years back and now we have one and a half days induction to help include what we need to include. I believe that induction is very important. **Lack of time is a barrier to improving the induction programme.**
Researcher: Is there anything that you would like to add about offering ultrasound, your experience, in this Trust?
Interviewee (18): I think comparing if you are in the European community, I have been to Spain and France, I think most women in each visit get a reassuring scan and perhaps because the NHS is free, it is difficult to, What I am looking forward to one day when everyone will have some sort of scan rather than the fetal heart monitoring or the fetal heart listening rather than just have a scan, a quick one. **This doctor wants a scan for every woman every time they attend clinic, but thinks this will not improve mortality or morbidity rates.**
Researcher: Did you say that you worked for three years oversees?
That is right
What was your experience in terms of comparing with your experience now, was ultrasound easily to hand, could you get an ultrasound scan relatively easily/
No, when I worked in the late eighties, it wasn't but now yes,
Researcher: Is it on a par with the type of service now?
Interviewee (19): No because most of it is not NHS it is private, even in Europe, you do not get a scan if you go to NHS, but everyone in the system or in Ireland or Holland book and in the package their is scans and the people doing the private practice in the UK are still doing a few scans more than the NHS, in the package.
Yes, And do you think if we were to offer to scan each time we saw the woman, in terms of a reassurance scan, do you think it would improve our mortality and morbidity rates?
No
Or would it improve anything else?
Interviewee (20): When we quantify our care, no but what is good care to someone else is not necessarily good care in terms of improving outcome, but that it is good that we keep the mental side and keep some one calm and that is good, but how do you quantify that? I am not saying scan at every visit but perhaps an interim scan sometimes will enlighten some of the mothers. Look at the services in some of the areas such as the private service; they do have a third trimester scan. **Now talks about trying to offer every women a third trimester scan to reassure them.**
Thank you.

Transcription of the Tape Recording of Interview (I8)

- The number in the brackets refers to the response paragraph or sentence
- Researcher/interviewers memos are added in bold text

Researcher: I just want to hear about your experiences and feelings about offering ultrasound to women in obstetrics and in particular when offering ultrasound in screening. What are your experiences when you offer or discuss ultrasound screening?

Interviewee (p1): I think, on the whole women find it reassuring, but I try not to, in early pregnancy, offer a scan too soon and then usually if it is offered then there is a reasons such as dating or query ectopic pregnancy... I expect they are probably reassured. **Believe that women on the whole feel reassured by ultrasound**
Researcher: Reassured by being offered a scan. Can I ask, why do you think they feel reassured.
Interviewee (p2): Well I think by seeing a fetal heart beat or that they have got a cyst, having some reassurance, it's what they see on the scan. Unfortunately I think this day and age it's expected isn't it. Erm I think if we just examined them and said "yes the uterus feels twelve weeks, you can have your scan next week" women would be quite upset. So I think it has become the norm but it is not always a good thing.
Reassured because it is the norm to have ultrasound scans
Researcher
In terms of working, how many years experience would you say that you have had in obs and gynae?
Interviewee (p3): I have had over 7 years experience at a senior level.
Researcher: Have you any experience of working oversees?
Interviewee (4): No, well I did an elective but I did not scan
Researcher: Any experience working in obs and gynae, out of this Trust?
Interviewee (5): Yes, I have had experience and training in another Trust about 5 years ago.
Researcher: In terms of working elsewhere, earlier in your career, what are your recollections about talking to women about ultrasound Do you think it has changed at all? Do you think the new starts that come in now, have any problems offering ultrasound to women or not offering ultrasound to women, especially when they might think the women should not have a scan?
Interviewee (6): I think that the practice has changed and when I started I was just a timid SHO in South Wales and then I moved to Gloucester and then Nottingham and during those years if there were women who were threatened miscarriages then they would be admitted and scanned the next day, but now we have a same day scanning service **do some junior staff value the use of ultrasound scan over clinical examination** and also when I was an SHO and I still try and get them to examine the women, but I think the important thing in early pregnancy is to examine and really document and be clear about the state whether the cervix is open or closed. If it is open then I would not offer a scan and that is recommended teaching because if the cervix is open then it's inevitable so we should not scan. Now, I don't think a lot of the juniors realise the significance of their examination, because there is a real subtlety and we have to rely more on examining, for example if someone is 8-9 weeks and feels 8-9 weeks and the cervix is closed and we think yes they can have their scan if however they were 12 weeks and they only felt 7-8 weeks you think it might be a missed and you would possibly tell them that and if the cervix is open and you see products then again that is inevitable. So what I saying is, I think they do rely on the scans now

whereas we had to rely more on the examinations first and route out the ones that we would not scan and I find now is that a lot of people, like the patient last week who had come in with an open os, she was being offered a scan and they had pulled products out so there was no point in offering her a scan. So I think they are ruled by the fact that they can request a scan. **Ruled by the fact that they have the scan service easily available.**

Researcher: Do you think there is now more reliance on ultrasound scanning?

Interviewee (7): Most definitely and for example in early pregnancy as an SHO, and as a Registrar I was the person looking at the early pregnancy patients and I worked in a unit where they were really, one of the first units to start the early pregnancy units in Gloucester but what they would do would be anything between 5 and 10 patients at night, all be clerked, seen by the juniors and then they would go off and have their scans, however we would examine them before they went on for their scans and we would reduce the number of patients requiring the scan. Bring things forward to 2002/3 and my next role in another Trust, working in their EPAU, this time there was a proforma filled in by the nurse, they would be scanned, the viables would go off and then the doctor would examine the others.

Researcher: Do you think there is now more of an automated pattern to the pathway?

Interviewee (8): I think so, I think there is less for them to think about and they do not have much to think about and why and also, I know you are not asking that person anyway, for example post natal, postpartum bleeding, certainly it was impressed upon us as junior doctors that you did not order a scan for these women, you examine them, you see what is going on, the likelihood is endometritis and they will not need a scan. Whereas now I have to stop women, juniors from sending women down for a scan. **Doctors now are quicker at requesting scans and are more reliant on their use.**

Researcher: There is a change in practice...

Interviewee (9): Definitely,

Researcher: Since your time as a junior member of staff.

Interviewee (9): nods

Researcher: Just take you to anomaly screening, whether we are talking about Nuchal screening or the 20 week anomaly screening. In terms of your impression, how much knowledge do you think the medical professionals have on the issue of screening using ultrasound?

Interviewee (10): I think that depends on how much involvement they have in obstetrics. I think a very new SHO may think that an anomaly scan is 100% and would have a little knowledge if obs and gynaecology is part of their rotation. To be an obstetrician they will realise that nothing is perfect and they will realise that 1 in 40 (isn't it) abnormalities are missed at the 20 week scan. **This senior doctor asks me if this info is correct.** I am not sure how many will know anything about Nuchal translucency so they may know Kypros stats which are based on high risk women but I do not know how much they may know about normals.

Researcher: So when you get your new starts, how much information is given to them and how much are you expecting them and to go out and find information?

Interviewee (11): Well, they have a bit of information given to them through their induction then in clinic when new patients come though and are requesting invasive tests or want to know a bit more about nuchal or are over 35 then if they have not got experience in talking to women before, then I would speak to the women and I would expect them to listen really and then I also encourage them to attend a Friday morning clinic **the onus is on the junior doctor to attend a session and observe a session that sees high risk women for assessment** and hear our screening co coordinators. They do not all go but that is the expectation. In the past when I was an undergraduate tutor, I would probably get the screening co coordinator to come and talk to them one Wednesday. That is what I used to do but I do not think that is being done now and that is what I do with my juniors, take them though cases.

Researcher: So there is a little bit of self introduction into the role but there is some support, or feel you try and give them some support from other professionals like the screening co coordinators and a very small amount of help from the induction process.

Interviewee (12): Yes, but I do not think that it is enough

Researcher: Can I ask you about, the time in the medical professionals' career where they may take their fellowship exams (membership) and does that incorporate an ultrasound scanning module?

Interviewee (13): Yes, but it never used to.

Researcher: Has that become more of a mandatory requirement?

Interviewee (14): When I did ultrasound training, there was not a mandatory ultrasound module but I had already scanned and had got myself interested and I just put in the hours. At one of the trusts, I worked in, there was a senior sonographer and I learnt more from the senior sonographer than from any of the consultants, especially since they were not skilled particularly in transvaginal scanning. So for me it was more experience through the old apprentiship, most of the time I was scanning and then when I was a registrar I would go to the fetal maternal units because my boss was interested and again through the apprenticeships, go and scan and lets see what you find, it was good and I had lots of hours before I did my diploma, so I was a bit more unusual, because not every consultant you speak to will have that diploma and then it is only in the last three or four years that this obstetric ultrasound.. has come into the general training. I think they should know about early pregnancy to look for viability but I would not expect them to do anomaly scans. Presentations scans obviously, liquor volume and at a push placental localisation. But my worry would be that some of them, and I know this, because I know what patients have been told, are not that experienced, but think they are. **This senior doctor thinks junior doctors and those with basic training think they know a lot more than they really do.** I do not mind if it is part of their log book now, because obviously for me I learnt how to scan and got a formal qualification as long as they are assessed properly and they have the time, which is fine. But beyond the early pregnancy and a bit of growth I don't expect them to be able do scanning. And I am not entirely sure where it leaves them really.

Researcher:...in terms of the service delivery....

Interviewee (15): Exactly...they are not going to help service delivery and they need the hours to get the experience and how we are going to do that! Because it is going to compromise services

Researcher: How much of the assessing and performing the mandatory training do you think has been spent discussing interprofessionally, in particular, looking from the ultrasound practitioners perspective do you think the college has had any discussion?

Interviewee (16): Oh yes I think there has been discussion, even when I was doing the diploma there was discussion about how I was going to get my hours and also they are supposed to by the time they sit they are supposed to have done their basic training, but you

know that they haven't and we try to provide it. There has been loads of discussion but it's all a question of having dedicated time and we are all mindful of service provision. So it has been discussed but I do not think it has been satisfactorily sorted. **Lack of time for training.**
Researcher: A suitable programme has not been rolled out.
Would you say that the staff that have gone through this mandatory training, both yourself and the others, do you think it improves their understanding of what women expect from ultrasound, in terms of the way that they observe and have training in a unit like ours, or do you think it doesn't make a difference?
Interviewee (17): I think if they have had some training then yes they do realise what hopes women have when they come for a scan. I think it has improved.
Values observation sessions for junior staff
Researcher: You think that some form of contact with the ultrasound unit does help them to deliver a better service ...yes..In particular, I am looking at how women are given information, how they perceive what our examinations are all about.
Interviewee (18): Yes, I think they can watch, they obviously can listen to what you say to them which is important but also I would like to think that if they are going to be obstetricians then they ought to understand the limitations of scans and there are green top guidelines, consensus reports from the college that they should be aware of, but yes I would like to think that they are more a ware but I could not vouch for it.
This doctor sees value in doctors listening to the counselling conversations other professionals have with women about options for ultrasound screening.
Researcher: Is there anything you want to add about offering ultrasound to women? How do you feel from your perspective? Can you add any personal comments about how we can improve how we inform women about ultrasound use in pregnancy?
Interviewee (19): No I do think we (all professionals) try to tell women that ultrasound is not 100% accurate **doctor feels that all professionals tell women ultrasound not 100% accurate but earlier said that junior staff would probably think the fetal anomaly scans are.** and those they can fail in picking up small or minor abnormalities, but I think the expectations are already **this doctor believes that women's high expectation already exists and that we cannot erode this** there and I do not think any of us can erode their expectations. Only if the midwives and the doctors actually emphasise about scans and about problems but I do not think we have the time and in an ideal world I think we could all each time spend 2 minutes saying at booking, at the dating please do not rely on the scan, but unfortunately, especially now the private scans are available, they still have the same, women still have the same expectations about scans if not more now. Well I would like them not to be so reliant on them, but they are and I think it is a shame that we can now tell them the sex of their babies, personally, I think it would be better if we didn't. **This doctor would rather we did not offer an opinion on the fetal sex during the 20 week scan.**
Thank you.

Appendix 14 Charting example of doctors' knowledge/experience and value of reassurance doctors place on ultrasound

Interviews in order of doctors medical experience	Interview 8	Interview 7	Interview 3	Interview 4	Interview 5	Interview 1	Interview 2	Interview 6
Their thoughts on the idea of reassuranc e		(3)..**lot of my clinical colleagues have started doing a lot of extra scanning** in the second and third trimester Just the feeling of moving, does not always confirm that everything is fine, so the perception is a recap. (p8) (9)..**I think that there is nothing as low risk in my sense because a low risk is only a low risk when you rule out high risks** (18).**I am looking forward to one day when everyone will have some sort of scan rather than the fetal heart monitoring** or the fetal heart listening a quick scan **(at each clinic visit)**	(3)..**It's just for reassurance because being a medical personnel, you just want to make sure because we do not know the implications of Downs and wanted to make sure that everything was fine** and it was very reassuring when we got our results from the amniocentesis *(doctors own personal experience)* Do you think that being a doctor and a mother increases the amount of reassurance that you are looking for compared to the women. (4).. I would think probably because we are looking for more probably the patients do not understand as much as we need to, **we are probably looking more into it,**		speaking on behalf of my partner, going in there **you just want to know that everything is alright,**	bit of a shock then, because **you are quite reassured by your figures,** (p1) 90% figure is something they click with at least if I get to this that stage, and I'm sort of out of the woods (p2) (4).**many would take repeated scans as a way of reassuring themselves that everything is all right** as essentially it is **because we use them for that as well** to ensure the	(21)..we got our AFP and it was raised . I went berserk, I could not believe it and we watched the baby about a hundred times and we went again for another scan and this time I was more prepared, (22)..And then we had Doppler abnormalities (absent end diastolic traces) and **I made the doctor do the Doppler three times or even four times and even before the section**	(9).. I don't know **I know there is sometimes there's difficulties with any investigation and you don't always get all the information that you need...** .. from the sort of induction and from teaching from registrar's and SHOs you know if we are seeing for example, one of those early pregnancy bleeds or something and betas are above a thousand and then you should get the information you want from the

						growth is right, for stuff like previous pregnancy loss. (p3)	**So I was in denial so I wouldn't accept the scan, I thought it was wrong and they were not interpreting it correctly**, they were wrong. P21) There is no risk of growth restriction, but we still, according to guidelines, **still do growth scans every four weeks and there is no actual need for that, but we still do Dopplers for cholestasis**	scans (10)..Yeah, I mean, I do understand that sometimes there are difficulties, you know, that's medicine really
Their comments that related to reliance	(7): **Most definitely more reliance now** , however we would examine them before they went on for their scans and we would reduce the number of patients requiring the scan. But nowadays there is a proforma filled in by the nurse, they are all	(5)..**I think most women desire a scan** and their eyes flicker when you say they are going to have a scan and **some of them even demand on grounds that are not scientifically founded.** (6)..We are finding **a lot of these women are going to the private sector to get the scans done** Look at the services in some of the areas such as	I would say that I think the same thing applies although all patients are not medical personnel, but what applies to us does apply to anybody. (p3) (10)**their expectations are getting more and more, they need that, science has advanced and they think that you should know everything.** if they haven't heard the foetal heart, I say to do a scan on her, I may not book a formal scan but **I**				So.... we tell the patient, **it Is more of the negative result, rather than trying to pick up things**. (p10)	

	scanned, the viables go off and the doctors examine the others. (p1): I think, on the whole **women find it reassuring,** but I try not to offer a scan too soon y... I expect they are probably reassured. (p2): Well I think by seeing a foetal heart beat or that they have got a cyst, **having some reassurance, it's what they see on the scan.** Unfortunately **I think this day and age it's expected isn't it.** (p2) **but I think the expectations are already there and I do not think any of us can erode their expectations.**(p19)	the private service; **they do have a third trimester scan.** **(p20)**	**may reassure her by showing her on the scan.** (p18)					

Appendix 15 Copy of the participants consent form

REC ref 09/H1308/86 Participant Number……

CONSENT FORM

Research Project:

To explore doctors' experiences when offering

ultrasound examinations to women in pregnancy

and build a theory that encompasses their perspective.

Researcher: Julie Edwards

please initial

1. I confirm that I have read and understand the information sheet dated 24th April 2009, version 1 for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ☐

2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving a reason, without my legal rights being affected. ☐

3. I understand that data collected during the study may be looked at by my supervisory team at the university, individuals from regulatory authorities or from the NHS Trust where it is relevant to my taking part in this study. I give permission for these individuals to have access to the data collected. ☐

4. I give permission for the interviews to be taped. ☐

5. I agree to take part in this study. ☐

Name	Date	Signature

Researcher	Date	Signature

Appendix 16 Copy of the participants Information sheet

Participation Information Sheet

Research Project: To explore doctors' experiences when offering ultrasound examinations to women in pregnancy and build a theory that encompasses their perspective

We would like to invite you to take part in a research study. Before you decide you need to understand why this research is being done and what it would involve you to do. Please take time to read this information carefully. Talk to others about the study if you wish. Ask if there is anything not clear or if you want more information. Take time to decide whether or not you wish to participate.

Purpose of the study

This study aims to explore the experiences of doctors involved in offering ultrasound examinations to women during pregnancy. The aim is to generate a theory or pattern of meaning in order to provide a new perspective in which service providers can more fully understand how women make choices when offered ultrasound during their pregnancy. Data generation will come from unstructured, one to one interviews and as the data are analysed, themes and concepts of the doctors' experiences will be allowed to emerge.

It is not within the remit of this study to debate the strengths and weaknesses of ultrasound use in obstetrics, nor is it aimed at attempting to influence the referral process, but its purpose is to build a theory that may provoke future debate over the expectations of women accessing ultrasound examinations in their pregnancy.

Background

Nicol, in 2007, evaluates the external pressures that influence the process of informed choice made by first- time expectant mothers. The paper describes the impossibility for women to make informed choices about accepting ultrasound examinations due to the influences of hospital and social cultures. Eurenius et al, 1997 found that often women displayed a misunderstanding of ultrasound's capability, typically expecting more information than the technique is capable of providing. A survey by Green in 1994, highlighted by Mitchie et al (1999), in their paper investigating how women make the decision to have prenatal screening, found that 25% of obstetricians said that their policy was to give a serum screening test routinely without offering women any explanation of its purpose or any choice about

whether or not they participated in the screening programme. In light of this, a search for obstetrician's views and protocols on offering ultrasound examinations found little unbiased information except with the regard to 3D scanning, promoted by private companies and individuals of which some advocates were obstetricians (Campbell, 2004). Data were available concerning the role of the obstetrician covering many case studies of a wide range of fetal abnormalities however all studies were of a quantitative reporting nature, no qualitative studies were found that investigated the experiences of the referrers when requesting ultrasound examination. This piece of work is important in that it will add knowledge, from the medical perspective, to the ongoing debate that surrounds the difficult issues of helping women make "informed choices" regarding ultrasound use in their pregnancy.

What will happen if you take part?

Through an informal interview, a small number of questions will be asked to help you tell your story or experience. Disturbances to the department will be minimal as interviews will take place away from the workplace so that you are able to feel relaxed enough to share your views and stories and arrangement of the timings of the interview will be negotiated prior to the event. Tape recordings of the interviews will be made to gather the data and the length of the interview will be approximately thirty minutes, although this time will be flexible.

It is envisaged that the process of gathering the data will take 1 year and during this time it may be that, after your interview, I may seek confirmation of some issues raised through informal discussion in a second short meeting. However, in this type of qualitative study, it is general practice for each participant to attend one interview.

Will your taking part in the study be kept confidential?

Yes, I will follow ethical and legal practice and all information about you will be handled in confidence. The possibility of disadvantages or risks of taking part is small however, it is important to understand that what is said may not be kept private but only who said it will be kept confidential. Understanding about what you want me to understand but not divulge may need to be confirmed in a second meeting before publication.

I will keep a balance on the depth of probing into a theme to try to stop you acquiring self knowledge that you did not seek or want.

If any issues are raised that impact negatively or confuse you, appropriate support will be made available for you to discuss these issues if necessary.

In terms of the data generated, any information heard or seen that may be harmful or have illegal implications, will be discussed with the appropriate professionals and action may be taken if felt necessary.

The issue of ownership of the data and conclusions drawn will remain initially with me; however, I will keep informed those who have continual input into the data generation. The final results will be

reported within the context of a doctoral piece of work and further dissemination is likely through relevant professional journals where you will not be identified in any report or publication unless you have given your consent. The information gained from this study will benefit the professionals involved in development of education surrounding "informed choice" in pregnancy.

This study has been reviewed and given favourable opinion by the Sheffield Research Ethics Committee.
The study is self- funded, with support from Sheffield Hallam University as the research within a doctoral thesis.

If you choose to participate you will be given an information sheet and a signed copy of the consent form.

If you think you may be able to help, please contact Julie Edwards .....on or Julie@edwards5676.freeserve.co.uk

Appendix 17 Results of five initial topics summarised

The charts of the five topics (appendix 11) have been colour coded to show how these three themes threaded through the data. Data relating to doctors knowledge has been highlighted in yellow, their ideas on the concept highlighted in green and their ideas on the practice of ultrasound use highlighted in pink. Below highlights the three themes found in the five topics. Three themes identified within the initial five topics (doctors knowledge-yellow, concept of ultrasound-green and ultrasound practice-pink)

1. Doctors experience of ultrasound use in Early Pregnancy Problems (EP)

- Some junior doctors felt they were not in control and were organised by the nursing staff who told them when a woman needed a scan.
- They felt governed by the process/pathway, rather than relying on their clinical judgement.
- The process made one doctor feel that their role was impersonal and suggested that this made them make assumptions over women's understanding of ultrasound capabilities.
- Some supported the use of statistics (overheard other doctors using) when discussing the ultrasound findings with women. They felt the use of facts/figures, gave them some confidence when helping women come to terms with bad news.
- Doctors' level of knowledge in the use of ultrasound varied and appeared to differ with grade.

2. Doctors perspective on ultrasound screening (fetal anomaly screening/ 20 week scan)

- Some assumed it was a standard/ routine test performed (within the normal antenatal pathway) and not something a woman is invited to opt into.
- Some described the role of discussion of the screening test as belonging to other professionals.
- Some felt there was a distinct lack of information about the screening programme offered by the Trust, through the induction process.
- One doctor described the concept of offering ultrasound screening as interesting, when they first realised that it was a test that women are invited to opt into. After having a personal family problem, they now agree that women should be fully informed before inviting them for the test.
- One doctor explained that they did not discuss the option of fetal anomaly screening as it was taken for granted that the woman would want the scan, otherwise they would have said they didn't.
- Some doctors thought that women do not understand they have a choice.

- One doctor realised how much they did not know about the fetal anomaly scan and how they would struggle to discuss ultrasound screening to women if asked.
- One doctor made the point that there are too many women for doctors to counsel
- One doctor felt that observing a session of ultrasound scanning was invaluable
- Several doctors commented that there was little or no information in the induction process about ultrasound screening.
- One doctor believed that all doctors should understand the basic principles around the tests that the women are offered
- One senior doctor felt that screening was very important to all of us.
- Several of the doctors would be able to discuss fetal anomaly screening with women if asked, but only because they have had some ultrasound training.
- One senior doctor reported that the iuniors would not be able to communicate effectively with women, about ultrasound screening, because they have not had any training.
- One senior doctor thought that some new start (SHO's) may think that fetal anomaly scans are 100% accurate.
- One doctor felt that all professionals should help women understand ultrasound capabilities and limitations and that fetal anomaly screening is optional, but felt women's expectation was already there and it would be difficult to erode this.
- One doctor felt that they would prefer if women could not ask for the gender identification of the fetus during the test.

3. What doctors want from Ultrasound Examinations?

- Sometimes their own reassurance
- A tool to reassure the women
- A tool to rule out 'high' risk pregnancies
- More ultrasound scans for each woman to provide a calming and reassuring feeling
- A reliable tool for assessing women in early pregnancy
- They feel there is a lack of information about ultrasound capabilities and limitations, both during university study and entering a new post. Some would welcome more structured support as at the moment it is an area of knowledge that is gained from a combination of observation of a colleague and personal experience of pregnancy.

4. Doctor's perspective on what women believe and expect from ultrasound

Believe:

- everything can be seen and found on ultrasound scans
- Ultrasound scans are the 'Gold Standard' (have not been assessed properly if they have not had a scan)
- A main reason for fetal anomaly screening is to determine the sex of the baby
- Women value ultrasound scan more than any other test or evaluation in pregnancy

Expect:

- Reassurance, which has now come to mean; seeing the fetus jumping about.
- In an overseas setting, to confirm that the fetus is alive and the sex of the fetus
- In the local setting, confirm that the fetus was alright and the sex of the fetus.
- More scans in their pregnancy.
- Pictures and show family and friends during the scan

Misconceptions:

- Creating fear about pregnancy, from other women's stories and a lack of understanding about pregnancy.
- Too high expectation of ultrasound capabilities
- Do not consider fetal anomaly scan as a screening test
- A main reason for fetal anomaly scan is to determine the sex
- All doctors will have knowledge about all the tests
- Everything can be seen and found on ultrasound scans

5. Doctors own experiences

Overseas:

- Some doctors felt that women overseas just wanted to know if the baby was alive and whether it was a boy or girl and were not bothered about whether there was a problem with the baby's structure as they would not terminate, due to their beliefs.

  Women who have come to live in the UK now appear to have more information and are challenging their beliefs and it may now not be so clear cut.

  Sexing has now been banned in the country they once worked in and they question whether the system has changed to offer fetal anomaly scanning.

- One doctor has practiced overseas and describes a private service where women are scanned at every antenatal visit. They appear to advocate this level of scanning for reassurance purposes, even though they feel it does not reduce the level of mortality or morbidity.

Personal experience in pregnancy:

- One doctor was shocked when they were faced with an unexpected result during an ultrasound scan, not prepared for there being a problem and was in denial
- Two doctors explained that they felt their expectations were similar to the women's expectations
- One doctor explained that when they went for a scan they only wanted to confirm that everything was alright and that they wanted a picture to show family and friends
- One doctor talked about getting most of their knowledge from their family and friends' obstetric experiences

Appendix 18 Examples of charting showing

a) the variation in what and how much knowledge doctors have of obstetric ultrasound and

b) the differing levels of training.

Interview	High level Of knowledge	Basic level Of knowledge	No knowledge
1			I don't know what the rate of picking up anomaly is on one of those scans (p2)
2	It has been offered to look for abnormalities in case they want to terminate their pregnancy. Few people have certain anomalies that can be corrected in – utero but they are far and few so this is not the main focus for screening. (p19)		
3		We just say we are just going to look at the general appearance of the baby. We don't really talk in detail to the, I must really think that the midwife is doing it and she is booking the ultrasound scan. We don't talk much about it. (p14)	
4	Probably not as much as what I would probably like (p23) so I think actually it is an area of my training , fetal anomalies that I haven't had much exposure to, because it is always creamed off into the specialist area and we just work as a general dogs body in the antenatal unit. So you don't get to see that much (p25)		
5		I was actually surprised at how much more you can see and I thought it was much more limited than it is so..(p9 and 10).	

				but in terms of screening and different a soft marker that was quite an eye opener for me I think that if I had been asked by a women I was offering ultrasound to , any specific questions, I would have felt quite under equipped. I would have been quite taken aback and I think now that I would have been unprepared for that. (p12)	
	6				What information do you get with regard to foetal screening, either from the university training or from your induction? Interviewee (23):I don't think there is anything specific that I have been given. The situation has not arisen yet where I have had to counsel a woman for a screening test as yet, but I guess that when the situation arises, I will be speaking to one of the registrars to get some information or have a look on the internet, but there has not been any information given to me. (p23)
	7	Yes, more or less the key point is what we see as structural abnormalities, we cannot see the function in general (p10)			
	8				how much knowledge do you think the medical professionals have on the issue of screening using ultrasound? Interviewee (10): I think that depends on how much involvement they have in obstetrics. I think a very new SHO may think that an anomaly scan is 100% and would little knowledge if obs and gynaecology is part of their rotation. (p10)

interviewee	**Ultrasound training**	**Learning from Univesity training**	**Self Taught**	**Personal Experience of ultrasound use**	**Listening to other medical staff**
1		the anatomy scan, they are just sort of			

		standard things like (p8)			
2	Few people have certain anomalies that can be corrected in –utero but they are far and few so this is not the main focus for screening. (p19)			I had raised Down syndrome and in spite of knowing that I still went, so it is very important to tell them that this(ultrasound scan) is a test and we are going to look for abnormalities, (p22)	
3					
4	I am addressing in my revision for my part two (p23)				worked for 18months at a fetal medicine unit (p25)
5					
6		What information do you get with regard to foetal screening, either from the university training or from your induction? Interviewee (23):I don't think there is anything specific that I have been given. (p23)	or have a look on the internet (p23)		I will be speaking to one of the registrars to get some information (p23)
7			Yes, more or less the key point is what we see as structural abnormalities, we cannot see the function in general (p10)		
8	They have an ultrasound qualification (known information)				

Appendix 19 Transcript of the 'Member checking' structured interview

R: Can you describe your experience as a doctor when you offer ultrasound examinations to pregnant women?
I: When I offer ultrasound examination I usually explain to them, that, is if it an early pregnancy then I tell them that what we are going to do like is what are the things we are looking into, like viability, number of foetus, placenta, all you see in the early part of the pregnancy. If it is of the later part like anomaly scan or something unusual, then I try to explain to them that in a clearly, what else we are looking in, like into a growth scan and all those things. So in a nutshell I tell them what is the finding they can expect; if there is something in the history, I tell them that there might be possibility of other things that can be there.
R: Do you ever explain to them what we might not be able to see?
I: Yeah, I tell them that sometimes they might ask something about of the sex of the baby that we can expect at in 10 weeks what there is anything abnormality we can find at dating scan that I tell them before ... this is a scan what are the things that we need to see, what we can see. So, but sometimes we ... the questions are not clear from the patients' point of view, they just ask vague questions. ...
R: Would you say that that's how you've always talked to women about ultrasound if for instance when you first entered after training as a doctor?
I: No, when I initially when we enter we, we didn't used to tell them what your, what you expect, we just told ok the ultrasound we are giving will, we need to do it but now... knowing the facts we tell them more about, some, some of these patients do ask about the risk of ultrasound in pregnancy so that's another thing we tell them if they ask specifically but yeah after the training and all those things it's, we give a more clearer picture than before.
R: through their training
I: Definitely
R: they're gaining more...
I: They are gaining more knowledge
R: more experience?
I: Definitely, they have a clearer vision than if they have before the training.
R: I just want to take you back to the point about early pregnancy assessment. Can you clarify for me who actually offers ultrasound to women in early pregnancy assessment in this hospital?
I: In this setting? In early pregnancy assessment usually there is a guideline in our early pregnancy unit so when they come with some, like bleeding, or there is a, there is abdominal pain with a serum levels up to a certain limit then they are automatically booked in for a scan from the early pregnancy department following that guideline.
R: Yes
I: Before that they may be seen clinically by the SHO and ... other medical staff and if they're (nursing staff) worried they call us. So it's, it's not directly from us they are booked in early pregnancy it's mostly done by the early pregnancy nurses.
R: And how do they know when to offer a woman?
I: Firstly they call ... differently to see ... and then they will write up for us a scan card.
R: Ok, and if I said that the terminology mentioned is clinical pathways are highly recommended in areas like early pregnancy would you agree?
I: Yeah I mean.
R: Do you know what I mean?
I: Yeah
R: In early pregnancy especially, our junior doctors are seeing women on a regular basis, what type of information do they communicate do you think?
I: To a patient?
R: To the patient.
I: A few things in the early pregnancy, one thing is if it is a threatened miscarriage now patients are very worried to know that babies viable so those are, that is the main important thing they tell. If it's a pregnancy of unknown location then they have to tell them that scan finding might be inconclusive or it might be a pregnancy not in the womb so they might expect more blood tests and come back. And with the missed miscarriages and all those sort of incomplete (miscarriages) they, get a more definite answer. That is the situation (that is what they tell women)
R: So they are really discussing the results of the ultrasound
I: Exactly
R: in relation to the outcome.
I: Usually we see suspected ectopics (registrars or senior registrars) or a pregnancy of unknown location and the SHO's call us
R: Right?
I: to explain to them (the patient)
R: And where do the junior doctors or doctors in training at that level get that information from?
I: It's all in the guideline.

R: In the guidelines
I: And they also have classes, I mean there's sort of training they get an early pregnancy sort of induction day and then they have taken the sort of lectures for that.
R: About the results of ultrasound and how to ...
I: If there is any doubt they always call us, so lets say like a patient has come with a severe bleeding, what, what you want us to do maybe tell Ok book them for a scan and then they read the scan out they explain to the lady that.
R: So then ...
I: Yeah, yeah, they know what they're doing.
R I've asked you probably and I think you've probably answered the question what knowledge are doctors taught about ultrasound when they enter their first year?
I: Now things have changed, before we used to get a general one day training ... and now that's been ... they don't have a sort of one day training it's all broken up into basic modules and then intermediate and then higher and that's the royal college accommodation so every ST1 trainee now in their first 2 years of training needs the basic ultrasound scan for early pregnancy and also from obstetrics. Now according to that they will probably send you to their training level, now suppose the trainee wants to do more in early pregnancy then they are going into intermediate and advanced level but everyone in first 2 years should have basic, sort of, *bleep goes off*, Ok so that's accommodated by the Royal College,
R: and in that training would you say, how much of the percentage of that training is on the practicality of ultrasound in other words how to perform ultrasound and how much would you say is about the subjectivity about ultrasound, what women perceive, what women expect?
I: Alright, now usually ideally what the Royal College is saying that you have to have a basic theory knowledge and then a bit of hands on but due to the European working time directive and rotas and everything doctors are not getting all the training.
R: No?
I: so what they are doing basically is they are coming and say seeing some ultrasound. Maybe once or twice in a blue moon they cannot get some hands on because it's too busy to fit around things.
R: Yes,
I: With other, with all these other sessions, so I don't think the training is that good in ultrasound averagely, some departments are very good, some hospitals.
R: It's not perfect?
I: No. They have hands on they do classes but not everywhere like that.
R: Can you remember back, what knowledge medical students have about ultrasound in pregnancy?
I: There have very poor knowledge they know how many scans have to be done in pregnancy some don't know that also. But what I found was they are given sort of lectures and clinical in the way they are taught, that how many ultrasounds and what other things, everything is written, everything is there. But how much they do practically ... it's difficult to tell because it depends on each unit.
R: Yes
I: Overall they know the basics that need so many ultrasound dating scans, this and that but I don't know the details.
R: But they know the pathway?
I: Yeah they know the pathway.
R: How much knowledge do junior staff, junior medical doctors have about ultrasound screening?
I: Ultrasound screening does ... at SHO level ST1, ST2. Most of them have a knowledge of what's screening, most of them.
R: How many screening tests using ultrasound would you say they would be able to describe?
I: They might, 2 or 3.
R: 2 or 3 what, which
I: Like Nuchal Translucency scan everyone should know I think they know NT scanning, growth scanning like ... growth scan, they know it because the are doing the clinics, like that they know was, but others like uterine Doppler
R: Right
I: most of them don't know there's a screening for high risk. But that's not something some departments have also so that, that's the thing that I think they should know. But that's not there.
R: What about the screening, the scan at 20 weeks, how much knowledge do you think they should have on that when they enter? What do they have?
I: Basic, modules, modules teach us, teach that basic things you need to know, but in the curriculum at the Royal College it isincluded in the intermediate level, the 20 week scan.
R: Yes, which, which would, would you say that's around year 2?
I: year 3, 4

R: Yeah 3?
I: Not in 1 or 2.
R: What do doctors value about ultrasound in pregnancy? What do you value about ultrasound?
I: It's very useful. It's very useful, very informative, in ... in every, every aspect of pregnancy now because of so many things that are done by ultrasound including 3D scanning and Dopplars, most of the things we can do with ultrasound. Other than few things like ... like MRI or something ultrasound can do 90% of the screening and the diagnostic tests in pregnancy.
R: Do you, as a doctor, rate ultrasound quite high up in all of the different aspects of tests that you can offer pregnancy?
I: It's highly rated as very good, excellent.
R: Where would you put the woman's perception of ultrasound in all of the tests that they're offered?
I: Women's perception is quite good they know where, what I saw that I found in this country is women know quite a lot about ultrasound, how many ultrasound scans, more than the medical students in the year 1, year 2 training. They know how many scans you need to do, what the things, they have quite a good knowledge actually, it's very good.
R: Do you think we meet their expectations?
I: I think so.
R: You think we do?
I: Other than 3D, 4D, I mean some are very keen on 3D and 4D scanning
R: Yes
I: Which we don't need, need to.
R: No. I think you touched on this point, which to, how much discussion about ultrasound screening is timetabled in for example your weekly lunchtime meetings? Is there ever a time that actually...
I: I think, in, in, in our unit it's very poor
R: Right
I: The training in others areas are better.
R: Would you think that there's room for improvement in looking at the timetable?
I: Yeah, exactly, there should be as sort of some restricted time to all the trainees in a timetabled schedule that you have to have a basic modules done which is not, I've come from London teaching hospital, they are, have to have a compulsory ultrasound training but it's not here like that. They have people who, the, the trainees have to make their own time for, find their own time from the night ... that which is not the Royal College comments actually.
R: And do you think there's a role for professionals here to support the medical staff?
I: Yeah, the most important role is the sonographers. You have to have a good understanding, because the sonographers have really tied up with their own work so it's not easy always to fit in trainees like that.
R: We see the same problems don't we in terms of time management... and training.
I: It's not an easy thing to do.
R: Ok, is there anything you want to add in terms of what you think about offering ultrasound to pregnant women. Do you want to give me any more information about the ultrasound service delivery, is there anything you want to add before we finish?
I: No, it's fine.
R: Happy?
I: Yeah, no I, you don't want to insert, it's a general sort of discussion, you don't want sort of delivery you are giving.
R: No it's really how you feel, it's the doctors' experience, and it's the doctors' perception of ultrasound...
I: I think more hands on training, more hands on time actually to be given by the people who knows how to ultrasound. Because see, I have done 1 year of intensive ultrasound in another hospital. I had NT scan (training) before I came to this hospital but I couldn't do it because of different issues, not only sonographer things it's our rota or many, many problems are there.
R: Yes
I: Which is not very good, actually?
R: No, because you're losing your skills?
I: Yeah, losing skills and the trust could have used my, I have all this skill of other things .
R: Yes
I: Could have done actually, so what I suggest is I might come in and join, it's not that you are not excellent in what you are doing but if you do it and see how things go it could all be a better thing. I could put, maybe do some practicing.
R: So there's room for inter-professional working and improving in terms of service delivery there.
I: I think this unit lacks a bit of more modernisation in ultrasound, more sort of support and it's a bit backward. It's service delivery. I think so, it's not I thinks it's over all management policy it's not only ultrasonic.

Appendix 20
An excerpt from the Induction Resource Pack incorporating fetal ultrasound screening information.

Information regarding the fetal anomaly screening (20 week scan), is highlighted in pink

UK National Screening Committee

Antenatal and Newborn Screening Programmes

Induction Resource

5. Fetal Anomaly Screening Programme

i) Down's syndrome Screening Programme (DSSP)

Down's syndrome (Trisomy 21) is a genetic condition. Down's syndrome occurs in approximately 1 in 800 births (Cuckle et al 1987). Most cases of Down's syndrome occur spontaneously, however in about 3-4% of cases the condition is inherited. The incidence of pregnancies affected by Down's syndrome increases with maternal age.

The aim of the screening programme is to identify those women at higher risk of having a baby with Down's syndrome and to offer this group diagnostic testing (see section 7). Women identified as having a baby with Down's syndrome are offered appropriate care either for the continuation of the pregnancy and delivery of the baby or offered a termination of pregnancy.

All pregnant women should be offered screening irrespective of age (UK NSC 2007, NICE 2003).

Broadly speaking there are two methods of screening for Down's syndrome:

- Biochemical serum screening (serum tests e.g. the triple test, quadruple test and serum integrated test)
- Ultrasound screening (Nuchal Translucency measurement)

For both methods, it is necessary to use software programmes to estimate the risk of a woman having a Down's syndrome pregnancy from the results. It is also possible, and recommended, to combine both serum and ultrasound screening tests, particularly in early pregnancy (10 -13^{+6} weeks).

Serum screening
A blood sample is taken from the pregnant woman at the appropriate gestation and tested for various proteins and hormones, usually in combination (see below).

Combinations commonly used from 15-19^{+6} weeks include *(NB: some units may be using other marker combinations which meet the programme standard):*

- alphafetoprotein (AFP), intact or total beta-human chorionic gonadotrophin (βhCG) and unconjugated eostriol (uE3)
- AFP, βhCG, uE3 and Inhibin A

Serum screening can also be carried out between 10 and 13^{+6} weeks gestation, the markers measured are free βhCG and Pregnancy Associated Plasma Protein A (PAPP-A). The NSC recommends that this test is combined with nuchal translucency (NT).

Ultrasound
There have been significant developments in using ultrasound techniques as a screening tool for Down's syndrome. Between 11 and 13^{+6} weeks in the majority of pregnancies, it is possible to measure the size of the fluid area at the back of the fetus's neck, known as the nuchal translucency or NT. An increased measurement of the NT indicates a greater risk of the fetus having Down's syndrome.

The NSC recommends ultrasound screening methods are combined with biochemical markers to give better detection rates. This is the suggested way forward for screening in England where sufficient resources have been identified. Combined tests include:

- **The combined test**
  A combination of serum markers (using free βhCG and Pregnancy Associated Plasma Protein A (PAPP-A) and NT scan in the first

trimester of pregnancy. The results are combined and a risk assessment is given in the first trimester.

- **The integrated test**
  In the first trimester (11 - 13^{+6} weeks) the NT and one serum analyte PAPP-A is measured. **No risk assessment is given to the woman at this stage.** Between 15 - 22 weeks the quadruple test is performed. The results from the first trimester and second trimester are combined and the woman is given **one risk assessment.**

NT is the only ultrasound marker approved for use in Down's syndrome screening by the NSC. Measurement of other markers, including the nasal bone, should only be offered in the context of an ethically approved research project.

Interpretation of screening results
The results of one or both screening procedures are entered into a software programme which calculates the risk of Down's syndrome in this pregnancy. A woman's risk is calculated in relation to that of the population covered by the programme. The levels of risk associated with having a Down's syndrome pregnancy in relation to a woman's age are shown in the table below.

To ensure interpretation of results from the screening procedures is as accurate as possible, it is essential to establish an accurate gestation of the pregnancy by early ultrasound scan. It is a standard of the Fetal Anomaly Screening Programme that all women undergoing screening for Down's syndrome have their pregnancies dated by ultrasound.

Levels of risk of having a Down's syndrome pregnancy in relation to a woman's age (Cuckle 1987)

Woman's age (years)	Risk as a ratio	%Risk
Below 20	1:1600	0.067
20	1:1500	0.066
30	1:800	0.125
35	1:270	0.37
40	1:100	1.0
45 and over	1:50 and greater	2.0

A risk assessment greater than 1 in 250 at term is judged to be within the higher risk category. In such cases women will be offered an invasive

procedure such as amniocentesis or chorionic villus sampling (CVS) (see section 7).

Presently about 5% of all pregnant women undergoing screening will have a higher risk result, and will be offered a follow-on invasive procedure (please check local data). However, **the percentage of women who undergo such procedures is slightly lower than 5% because not all women who have a higher risk result choose to have an invasive procedure**. One of the aims of the programme is to improve safety by lowering the false positive rate thus reducing the number of women who are offered an invasive test.

The Department of Health target set for April 2007 is for Down's syndrome screening tests to achieve a detection rate of greater than 75% with a false positive rate of less than 3% www.screening.nhs.uk/downs/home.htm

Please note that the NSC recommends that risk calculations for Down's syndrome in multiple pregnancies use NT measurements preferably in combination with biochemistry. Biochemistry alone should not be used (NSC, October 2004). *(Insert local provision including details of referral centre if women are referred to other units)*

Method of screening offered in this Trust is:

Test/s used:
Triple Test

Combined Test

- *Blood samples are taken between 15 and 19^{+6} weeks of pregnancy, the optimum time is 16 weeks for triple test and quadruple test. The optimum time for the combined test is 11 weeks, blood samples and NT to be obtained/performed between 11 weeks and 13+6 weeks gestation.*
- *If taking more than one blood sample at the same time, please take the Down's syndrome screening blood first as contamination from the EDTA in the other vacutainers can affect the result*
- *Serum samples are placed in a plain brown blood tube i.e. no additives and sent to:* local lab who then send them to immunology dept in Sheffield
- *For the triple test* the cut off used for 'high risk results is 1:200, any result >1:200 = increased chance, any result < 1:200 = lower chance
-
- *For the combined test* the cut off used for 'high risk results is 1:150, any result >1:150 = increased chance, any result < 1:150 = lower chance
-

Local detection rates/false positive rates are monitored by the antenatal screening coordinator.
Your Local Antenatal Screening Co-ordinator has copies of:

Trust policy document for Down's syndrome screening

National patient information booklet 'Screening tests for you and your baby' www.screening.nhs.uk/anpublications/index.htm

National Down's Syndrome Screening Programme (DSSP) Handbook for Health Professionals http://www.screening.nhs.uk/downs/Handbook_final.pdf (don't forget the underscore to get to correct link: Handbook_final.pdf)

National DSSP Education and Training Package (DETP) www.screening.nhs.uk/cpd/downs.htm

Further patient information is available from;
Contact a Family - www.cafamily.org.uk
The Down's syndrome Association – www.dsa-uk.com
Antenatal Results and Choices – www.arc-uk.org
Personal Experiences of Health and Illness – www.dipex.org/antenatalscreening

ii) Fetal Anomaly Ultrasound Screening Programme

All women should be offered a minimum of two ultrasound scans during pregnancy (NICE 2003).

At the first antenatal appointment women should be offered an early ultrasound scan for gestational age assessment. This scan should ideally take place between 8 and 13^{+6} weeks.

Pregnant women should be offered an ultrasound scan to screen for structural anomalies, ideally between 18 and 20^{+6} weeks gestation, by an appropriately trained sonographer and with equipment of an appropriate standard as outlined by the National Screening Committee (NICE 2003 & NSC 2007).

The National Down's Syndrome Screening Implementation Advisory Group and the Fetal Anomaly Ultrasound Steering Group recommend that at the time of a mid-pregnancy fetal anomaly ultrasound scan, a Down's syndrome risk generated by a nationally accepted screening method, either 1^{st} or 2^{nd} trimester, should not be recalculated up or down due to the presence or absence of a single ultrasound marker of less predictive power than increased nuchal fold (Smith-Bindman et al 2001).

The Fetal Anomaly Ultrasound screening programme has working groups looking at standards, consent issues and education and training. Standards to support the programme and guidance in relation to consent are expected to be published early 2008. Further information on all above aspects is available on the following web link:
www.screening.nhs.uk/fetalanomaly/home.htm

Appendix 21 A Model of Team Effectiveness

Rubin, Plovnick, and Fry Model—The GRPI Model of Team Effectiveness
This model by Rubin, Plovnick, and Fry (1977) is one of the oldest models of team effectiveness. It is sometimes referred to as the "GRPI Model," which stands for Goals, Roles, Processes, and Interpersonal Relationships where this model starts at the top of the pyramid According to the model, a team always should begin with a team level goal. After the goal is defined, the roles and responsibilities will become clearer. As individuals work together (processes), they will see that goals and responsibilities often are not sufficiently clear. Consequently, team members will need to redefine them. That redefinition enables them to adjust and readjust team processes, such
as decision making, conflict resolution, and work flow. When doing all that, they will be developing the interpersonal relationships needed to relate to other team members and the team leader.

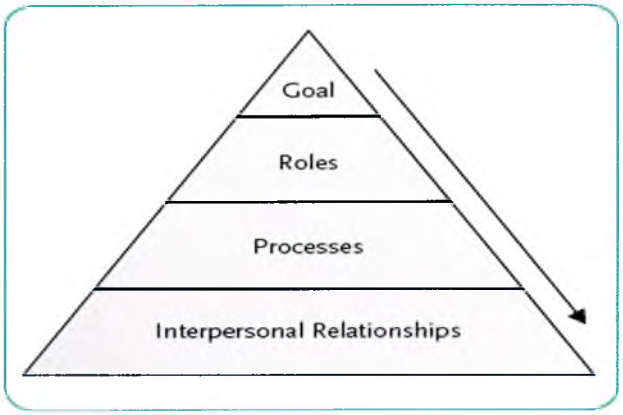


FIGURE 2

The GRPI Model of Team Effectiveness–Rubin, Plovnick, and Fry Model (1977)

Goal definition:
- Clarity about the main purpose of the team
- Agreement on the desired results
- Understanding of the main tasks
- Agreement on the standards and expectations
- Clarity of priorities and deadlines
- Understanding of boundaries

Role clarification:
- Acceptance of a team leader
- Understand all members' roles
- Individual responsibilities
- Shared responsibilities
- Clear boundaries
- Identify and fill gaps

Processes and workflow:
- Team processes – (e.g., how decisions are made, how the team solves problems and resolves conflict, communication)
- Work processes – (e.g., procedures and work flow)

Interpersonal relationships:
- Relating with the other team members
- Trust
- Sensitivity and flexibility with each other
- Good communication
- Collaboration in problem solving
- Effective methods for dealing with conflict